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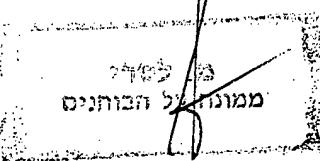
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בקשה לפטנט

אני, (שם המבקש, מטענו ולגביו נוב מואגד - מקום התאגדותה) :
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שיטת והתקן לבחירת ותצוגת הודיעות מולטי-מדיה

(בעברית)
(Hebrew)

METHOD AND APPARATUS FOR SELECTING AND DISPLAYING MULTI-MEDIA MESSAGES

(באנגלית)
(English)

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בקשת חלוקה Application of Division		בקשת פטנט נוסף Application for Patent Addition	דרישה דין קדימה Priority Claim		
מספר פטנט from Application	מספר/סימן to Patent/Appl.	מספר/סימן Number/Mark	תאריך Date	מדינה האגדזו Convention Country	
No. dated	No. dated	מספר מספר ימים	תאריך	מדינה האגדזו	
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METHOD AND APPARATUS FOR SELECTING AND DISPLAYING
MULTI-MEDIA MESSAGES

**METHOD AND APPARATUS FOR SELECTING AND DISPLAYING
MULTI-MEDIA MESSAGES
FIELD OF THE INVENTION**

5 The present invention relates generally to a method and apparatus for displaying and controlling subscriber selected messages and other related information using a television set or a video monitor. More particularly, the present invention relates to a method including a computer that generates a video information that is sent, using a cable-TV or other broadcasting network or networks, to be displayed on a subscriber's TV screen. The method further includes 10 an input device or input method, which may be a telephone, or a touch-tone keypad, or a speech recognition method using a telephone speaker, or a remote control unit or a keyboard.

BACKGROUND OF THE INVENTION

15 There presently are systems that allow a subscriber to view selected video information on cable television. These methods relate to a pre-existing video information or video streams, such as video players reproducing a video movie or program. There are also methods for allowing a subscriber to select to see such video streams using a telephone, for example for pay-per-view applications. (US Patent number 4,761,684 to Clark, et al).

20 Other applications using a TV screen display for sending textual messages to the subscriber's TV screens are also known (US Patent No. 5,497,186 to Kawasaki). This patent presents a central facility that transmits, together with a television signal, a message directed to a particular TV set. This message is textual only.

25 In another invention, (US Patent 5,089,885 to Clark, et al) a central processor sends a display of a menu to the subscriber's television, and the subscriber then selects, using a telephone keypad, a video source to watch. The video source is a pre-recorded video, such as a movie or a program, and is not generated by the processor of the system. The video display from which the subscriber selects a code is a list of all available video sources. This invention is a way of performing a pay-per-view application, and is not an interaction with an information

store in which the information store generates a video screen sent to the subscriber's television as requested.

These inventions basically include a table of codes, which is displayed on the TV screen. Upon pressing a certain code on the telephone keypad, instructions are transmitted via the 5 telephony system to the TV broadcaster, who broadcasts a selected video to the TV screen.

Voice, fax, and e-mail messaging systems are examples of messaging systems in general that allow people to leave messages for other subscribers on the system (that subscriber is also called mailbox owner, or just subscriber throughout this document). The most familiar messaging system is a voice-mail system, where a caller can leave a recorded voice message to 10 the called party, if the called party did not answer the call or the line was busy.

Another known messaging system is electronic mail, or e-mail. Fax is another known means of communication. Many telephone system operators offer some kind of messaging to their subscribers, and most telephone and cellular telephone operators offer voice-mail systems.

Unified messaging systems are also known. These systems combine all types of messages 15 and make them appear as "unified" from the standpoint of the user. For example, when a user accesses the unified messaging system using a telephone, the unified messaging tells him/her about all types of messages, including but not limited to voice-mail messages faxes and e-mail messages. Such systems are offered by Lucent-Octel messaging division (USA), Active-Voice (Seattle, USA), AVT (Seattle USA), and Comverse, NJ USA, for example.

Unified messaging systems are usually connected to a PBX (Private Branch Exchange) and 20 also to the LAN (Local Area Network), and provide their user with a graphical user interface that runs on his/her PC (personal computer), in addition to the telephone user interface. See for example US Patent 5,568,540. Unified messaging systems that are used by service-providers (such as GTE, USA) are connected both to the telephone switch and to the Internet, and provide 25 the user also with a graphical user interface that is accessed from his web-browser program or other Internet-based applications.

None of these systems allow a subscriber to have, on his or her TV, a display containing a list of all messages that originally arrived from the telephony or the e-mail network and were

sent to him (such as voice-mail message, fax, video messages) and then to selectively select from the messages list a message, and to play or view or reply to this or these messages either using the TV capabilities, or a telephone capabilities, and have additional control over one or more of these messages, such as delete it or reply to it.

5

SUMMARY OF THE INVENTION

In this specification, including the claims, the term 'video signals' relates to signals containing audio, as well as visual data, and alternatively also data signals such as commonly inserted in television synchronization intervals. The video signals may be of analog or digital 10 nature. Similarly, the terms 'video messages', and 'audio visual messages' are used interchangeably in the specification, except when the nature of the discussion differentiates therebetween, and displaying of such messages includes audio reproductions, according to the nature of the message. The terms 'user' and 'subscriber' are also used interchangeably throughout.

15 The present invention provides an apparatus for remote viewing and controlling of selected messages, stored in at least one messaging server (such as, but not limited to, a unified messaging system, voice-mail system, fax server system, e-mail server or any other message store and management system), at a subscriber remote receiving location having a television set, the apparatus including a television messaging gateway coupling the messaging server to the 20 television set, whereby the television set serves as an output device for messages stored or displayed by the messaging server.

According to a preferred embodiment, the apparatus further includes an input device for inputting subscriber commands to the television messaging gateway. The input device may be a telephone touch-tone key-pad, telephone microphone using speech-recognition technology, a 25 keyboard linked to a set-top box, a pointing device or other remote control unit linked to the set-top box, all depending on the availability of these devices at the subscriber's premises.

Thus, it is a particular feature of the present invention that the television becomes an interactive messaging center, whereby pressing buttons on the telephone keypad for example,

causes the graphical display containing a list of messages, or a particular message, viewed on the TV screen to change.

The television messaging gateway can be coupled to any downstream network for distributing messages, including but not limited to cable-TV, satellite, terrestrial, wireless, 5 cellular, and others.

According to a preferred embodiment of the invention, the television messaging gateway includes a CPU and memory module, a communication card, such as LAN, an input device interface, and a video output module.

Further according to a preferred embodiment of the invention, the television messaging 10 gateway includes means for providing message notification to the subscriber's television set.

The present invention also provides a method for remote viewing of selected messages at a subscriber remote receiving location including coupling a television messaging gateway to a television set, coupling at least one messaging server to the television messaging gateway, and causing said television messaging gateway to provide messages received in said messaging 15 server to said television set for audio-visual display thereon.

According to a preferred embodiment of the invention, the step of causing includes inputting subscriber commands to the gateway.

The present invention is designed to operate primarily in a television broadcast system having a central location with at least one video source connected to a downstream network 20 constructed to carry video signals and selectively distribute said video signals to a plurality of addressable remote terminals connected thereto. Each said remote terminal is constructed to selectively receive and display the video signal on a television set. The invention operates in conjunction with a messaging server constructed to store and forward messages, and an upstream network capable of delivering user input signals from a remote location to said central 25 location.

The television messaging gateway has a message control interface coupled to said messaging server for controlling at least one message therein, said message having address information associated therewith, to associate said message with at least one user. An output

module, which can be a video output module, coupled to said downstream network, generates information signals, which can be video information signals, corresponding to said message, to be fed into said downstream network for display on a television set coupled to said addressable terminal. The television messaging gateway also includes logic to direct said message between 5 said message receiving interface and said output module.

The television messaging gateway may further include an input device interface connected to said upstream network for receiving user input signals. The logic is constructed to interactively respond to said user input signals, and selectively direct messages to an addressable terminal associated with a user. The logic is further constructed to display a list of 10 messages available for a specific user, to enable said user to select at least one message of said list for display. A user interface module, responsive to user input signals and constructed to cause generation of video information to display data corresponding to the type and number of messages directed to a user, and to facilitate user selection of messages to be directed to said addressable terminal. In the preferred embodiment said input device interface comprises a 15 telephony interface, and said user input signals are inputted using a telephone.

In one preferred embodiment the television messaging server is coupled to an IP based network for receiving messages and user input therethrough. The television messaging gateway may be integral to said messaging server, or located remotely therefrom.

Alternatively, the television messaging gateway further comprises storage means to store a 20 plurality of said messages and the addressing information associated therewith. Such storage device would also store a database to correlate said addressing information with a specific user and addressable terminal. An additional alternative includes the capability to use said user input signals to identify and select an addressable terminal to direct messages to.

Alternatively, said television messaging gateway also comprises receiver means to receive 25 user generated messages for directing those messages to other users within the system or outside it.

In the present invention, the messages can be audio messages, video messages, fax messages, text messages, multi-media messages, and e-mail messages, or any other message

directed to a user or a group of users. The downstream network can be selected from a cable television network, a satellite television network, a terrestrial video distribution network, a radio frequency video distribution network, a cellular network, a hybrid network, or a combination thereof capable of delivering the message data to be ultimately displayed on a television set, or 5 for utilizing the television speaker as an output device.

Similarly, the user input signals can include telephony input, touch tone signals input, voice input, remote control device input, pointing device input, and keyboard input, or any similar device designed to allow interaction between the user and the television messaging gateway. The upstream network can be a telephony network, a bi-directional television distribution 10 network, a wireless network, or a dedicated wire network, or any combination thereof or similar in function, to convey user input signals to said television messaging gateway. An example of an upstream network is a bi-directional television distribution network, wherein the remote terminal is adapted to send user input signals to the television messaging gateway via the upstream network.

15 The invention is especially suitable where the video signals comprise digital video signals and wherein the downstream network is constructed to transmit digital video signals and addressing information to a selected addressable terminal.

The invention also teaches a method within a television broadcasting system for receiving and storing a plurality of messages directed to a particular user, converting said messages to 20 video signals and, selectively transmitting said video signals to a particular television set associated with said particular user for outputting said message on said television set. The method may also comprise the steps of receiving user input signals via an upstream network, selecting one or more messages in accordance to said user input signals and, converting said messages into video signals for output by said television set. Furthermore, the method provides 25 for the step of entering user outgoing messages via said upstream network.

In order to facilitate management of said plurality of messages, the invention provides for the steps of generating message management information screens corresponding to said plurality of messages, and displaying said screens on a selected television set associated with said particular user; receiving user input signals to direct a television messaging gateway to

select at least one message for display; and, converting said message to audio-visual television signals for outputting by said television set. Said steps of converting and/or generating may be preformed by said television messaging gateway physically located remotely to said television set, or by an addressable terminal physically located in proximity to said television set.

5 It is therefore an objective of the current invention to handle messages received from a telecom network, which messages are stored in a unified messaging storage, by coupling said unified messaging storage to a television messaging gateway, and selectively outputting said messages via said messaging gateway to a television set.

10 A computer is a preferred method of practicing substantial portions of the methods described above. Additionally, a computer, when properly configured and when executing a program, is a preferred method for implementing the apparatus described above. It is therefore clear that a computer readable media, containing software that when executed by a computer will cause the computer to substantially perform any or all of the methods described herein falls under the scope of the current invention.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be further understood and appreciated from the following detailed description taken in conjunction with the drawings in which:

5 Fig. 1 is a schematic diagram of one embodiment of the invention where the invention is used over a cable-TV network that also provides switched telephony service.

Fig. 2 is an example of a welcome screen according to one embodiment of the invention.

Fig. 3 is an example of a message handling screen according to one embodiment of the invention.

10 Fig. 4 is an example of a voice message handling screen according to one embodiment of the invention.

Fig. 5 is an example of a fax handling screen according to one embodiment of the invention.

Fig. 6 is an example of a video message handling screen according to one embodiment of the invention.

15 Fig. 7 is an example of a closing screen according to one embodiment of the invention.

Fig. 8 is a schematic diagram of one embodiment of the invention where the invention is used over a satellite television network together with the public telephone network.

Fig. 9 is a schematic diagram of one embodiment of the invention where the invention is used over a cable-TV network that also provides IP-telephony service.

20 Fig. 10 is a schematic diagram of the hardware of one embodiment of the invention.

Fig. 11 is a flowchart describing the process that occurs when a subscriber is dialing to the system to retrieve messages according to one embodiment of the invention.

Fig. 12 is a flowchart describing the interaction of the subscriber with the system using a telephone, according to one embodiment of the invention.

25 Fig. 13 is a flowchart describing the process of sending or replying to an e-mail message according to one embodiment of the invention.

Fig. 14 is a flow chart describing the process of leaving a message waiting notification or indication on the television screen at the subscriber's premises.

30 Fig. 15 is an example of a screen sent to the subscriber's television for message waiting indication according to one preferred embodiment of the invention.

Fig. 16 is a schematic diagram of one embodiment of the invention where the invention is used in a head-end where more than one messaging server is attached to a single TV messaging gateway.

Fig. 17 is a schematic diagram of an embodiment of the invention where a telephony provider (telco) is connected to one or more TV messaging gateways connected to one or more television broadcasting systems.

Fig. 18 is a schematic diagram of an embodiment of the invention where telephone messages arrive at the subscriber's telephone from the public switched telephony network and the messages are redirected to a messaging server connected with the television messaging gateway.

DETAILED DESCRIPTION OF THE INVENTION

The present invention relates to a method and apparatus for remote viewing of selected messages on a subscriber's television set at a subscriber remote receiving location. The messages can be received from any message store and management system, including voice-mail, e-mail, fax server, or any other messaging server. The messages can be broadcast over any type of downstream network, such as cable-TV or satellite broadcasting systems (DBS), or any other network that is capable of carrying analog or digital video signals to be processed and displayed by a television or similar video display device. The present invention utilizes the graphical power of the TV screen for the purpose of displaying messages, message management screens, such as a list of all message types on the TV, or various properties of the message, such as size, content, sender, etc., and provides means for the user to select or otherwise handle a message. A selected message or messages can be displayed on the TV screen, played using the TV speaker, or converted into speech, whichever is appropriate for the type of message. The system also provides means for the user of the system to send a message back to the sender of the message, using the same means of communication, for example, replying to an e-mail message using e-mail. The system also provides means for sending messages to other users. All this is provided by a television messaging gateway interposed between the messaging server and the television set.

The present invention is particularly suitable for use with unified messaging systems of all types. The power and usefulness of such systems depends upon the easy and user-friendly access that these systems allow for the subscriber or mailbox owner. The example given is of a cable-TV network operator (or MSO) that also provides telephony services. The invention acts as a bridge (or gateway) between any store and forward messaging system, and a TV set, and utilizes the graphical and audio-visual capabilities of the television set together with the interactive capabilities of the telephone.

The invention further includes an input device for inputting subscriber commands to the television messaging gateway. The input device can be a telephone key-pad, or a microphone with speech recognition apparatus, a remote control unit, a keyboard or a mouse (if available), or any other similar device commonly used for receiving input from a user and converting that

input into an electronic form. The user selects a message for playback, and can also provide instructions for message handling, such as delete the message, save it, forward, reply, move into folders, and add voice or textual attachment. The input device interface accepts the electronic input and directs the apparatus to respond to the user commands.

5 A display can also include, merged into a single list, e-mail, voice, fax, and video messages for the user. It should be noted that the present invention could be used with any combination of these media, or even a single medium, for example voice-only (voice-mail), or fax-only (fax server or fax mail).

This invention is operative with any television or video (either digital or analog) 10 broadcasting network, including, but not limited to, cable-TV systems or networks, satellite, hotel closed-circuit TV systems, terrestrial, wireless, cellular, MMDS, radio frequency video distribution, hybrid, and others. The TV broadcasting network communicates with a set-top box associated with a subscriber's television set. For purposes of the present invention, the term set-top box includes any external, internal, or other television controller or tuner for 15 downstream or upstream feed. The set-top box need not be a separate box, but may be an integral part of some television models. According to one embodiment of the invention, the set-top box is addressable and has a screen-display feature, which means that it would continue to display the last frame it received until another frame refreshes the display.

It is a particular feature of the present invention that menus, graphical and textual 20 information, and interactive command keys, are presented on the subscriber's TV in video form, generated by the TV messaging gateway or synthesized by a set-top box in accordance with instructions from the TV messaging gateway, transmitted to the set-top box and then fed as a video to the television screen. Such interactive features and conversion of data into video form are not known or suggested by any conventional methods of presenting messages to a user.

25 Referring now to Fig.1, there is shown a schematic diagram showing a first embodiment for carrying out one aspect of the invention. The environment of this embodiment is cable television, or a hotel cable system, or any other system or network where a telephone and television are deployed. Television here means a regular TV set, or a high-definition TV set (HDTV) or any other screen equipped device that is used mainly for viewing video

transmissions, as opposed to a computer screen that is used mostly for Internet or for other computing tasks and applications.

The apparatus of this embodiment of the invention includes a telephony switch 150, a messaging server 160, and one or more video servers 155. The term "video server" represents 5 any source of video programming, such as a video-tape player, or any other means used at the head-end for reproducing video programs or movies. It should be noted that these components need not necessarily be located at the same location, or operated by the same operator, and different companies or operators can own these components, as long as they are connected using the present invention as described herein. The term "messaging server" refers to any 10 store-and-forward server, such as voice-mail server, e-mail server, e-mail server that is equipped with multi-media, a video messaging server, a fax server, or a unified messaging server. The telephony switch 150 is connected to the cable network for delivering the calls to the subscribers' homes, and is further connected to the public telephony network 145, and optionally, can be connected also to other telephony switches in the cable operator's network 15 (not shown). Telephony switch 150 is also connected to the messaging server by means available for this purpose, such as but not limited to T-1 or E-1 or PRI ISDN lines, or by means of Voice-over-IP or by any other voice transport means. In addition, unified messaging server 160 can optionally, be connected to the Internet 140 by known means available commercially.

When a call arrives for a subscriber, the telephony switch directs the call via the cable 20 network to a telephone located at the subscriber's default location 110. The means for transferring the call to the subscriber's home 110 can either use the same cables that are used for transmitting video, or can use separate wires, such as hybrid cable networks deployed in the UK, for example. Means to connect the telephony switch 150 to the cable network are available commercially from General Instruments (GI) USA, for example.

If the call was not answered, or the line was busy (depending on the switch and the 25 particular extension preferences and set-up), the switch re-directs the call to messaging server 160. Other means for re-directing a call are presented in Figure 18. The messaging server then answers the call and generally records a message or receives a fax.

From the head-end office 165, video (and optionally, voice and fax calls, and IP traffic for telephony and for Internet) is transmitted by means of the cable network, and reaches the subscribers' remote locations. An example of subscriber remote location equipment is block number 110. Typically, each subscriber is equipped with a set-top box 115 of one of various 5 models. The set-top box is connected to a TV set 120, to a remote control unit 130, and optionally, can be also connected to a keyboard 135 and to a telephone 125. Alternatively, the telephone can be connected to the cable network that is presented in Fig. 1 using other means available commercially. Optionally, a video camera 175 can also be connected to the set-top 10 box to be used for sending video pictures or short video movies as video mail by the user. When a call arrives to a subscriber remote location, and there is no reply to the call, or the phone line is busy, and the subscriber has requested that the call in either or both of these scenarios will be transferred to a messaging system, such as unified messaging server 160, the call is then 15 re-routed by the switch 150 to the messaging system 160. In a typical scenario, call details are transmitted from the switch 150 to the messaging system 160, indicating at least the called number (the subscriber's home number) and, optionally, additional information such as the caller ID, and the reason for the call re-routing. The messaging server 160 then answers the call using the subscriber's mailbox parameters and out-going-message, and records a voice message, or receives a fax or receives a video message. The messaging system can also be connected to an e-mail server, or be an e-mail server itself, thus optionally, can store the 20 multi-media message as e-mail, or store e-mail separately, or do both. Messaging systems of this kind are available commercially, for example from Comverse Technology, N.J., USA, and from UniTel Vocal Communications, Or-Yehuda Israel.

When the subscriber wishes to retrieve his or her messages, there are typically three choices:

25 The first choice is to dial to the system by telephone. In this case, voice messages can be retrieved using the touch-tone keys of the telephone set, as known, faxes can be re-sent to any fax machine by indicating the destination fax machine's phone number, and e-mail messages can be converted to speech or to fax and be read over the phone or sent as fax.

The second choice is by use of a PC e-mail client, such as Microsoft Outlook express. In this case, the voice messages are played using the computer speakers, faxes are shown on the PC screen or printed to a printer, and e-mail messages are also shown on the screen.

5 The third choice is by use of an Internet mail, which is similar to the e-mail client, but without the need for e-mail software. Devices for performing all these functions are known and available commercially by Yahoo, Jfax, Hotmail, Microsoft, etc.

10 The present invention provides an additional or alternative means for retrieving and controlling messages, and provides this using a television messaging gateway 170, which utilizes the subscriber's TV screen as a display device, the TV speakers as audio display, and the telephone 125 as an input device. Alternatively, remote control unit 130 and/or keyboard 135 can be used as input device.

15 TV messaging gateway 170 hardware according to one embodiment of the invention is described in detail in Fig. 10. The gateway can be built using commercial PC hardware. According to a preferred embodiment of the present invention, the TV messaging gateway is built using industrial PC computer components (available commercially from Texas Micro, USA, for example). An enclosure 1010 houses a passive back-plane 1080. A CPU and memory module 1020, a communication card 1030, such as a NIC (Network Interface Card) are connected to back-plane 1080. An input device interface, here illustrated as telephony interface card or cards 1070 are used to connect the unit to the input device. Such telephony interface cards are selected according to the type of the telephony connection required to the switch, and are available commercially, for example, the D300SC-E1 card manufactured by Dialogic, NJ, USA. In addition, according to another embodiment of the invention, speech recognition accelerator cards, such as Antares card manufactured by Dialogic NJ USA may be used (not shown).

20 25 TV messaging gateway 170 further includes a output module 1060 which generates information signal corresponding to a desired screen (or specific instructions for a "smart" an set-top box to synthesize the desired screen). The information signal can be generated in an analog or a digital format, whichever is suitable for the broadcasting network. According to a preferred embodiment of the invention, output module 1060 is a video output module, and the

generated information signal is a video signal, although alternatively, other output modules can be utilized. Analog modules are available from Matrox USA, or from Imaging Technology, USA. Alternatively, there are real-time digital video compression cards, such as VideoPlex card provided by Optibase, Israel, that can compress video, in real-time, and output it as a suitable stream, such as an MPEG-2 stream, that then can be fed into the downstream network, through a video multiplexer 167 (Fig. 1), available from General Instruments (GI), USA, for example. The signals generated by output module 1060 may be fed into pre-determined channels in the broadcast network. An alternative to a video module may be a data-base server that is capable of generating compressed digital video, such as Oracle's video server system available from Oracle, USA. According to another embodiment of the invention, the addressing information (the set-top ID) can be sent using known digital means such as DVB standard (Digital Video Broadcasting). It should be noted that the output module could be of various types, as described, in order to fit different head-end systems. According to another embodiment of the invention, more than one output module, possibly using different video and/or addressing standards, may be attached to a single TV messaging gateway to connect it to more than one head-end.

The overall process according to a preferred embodiment of the present invention is described in Fig. 11. At step 1110, typically, a subscriber is using the telephone that is installed at his remote location, and is watching the TV screen. The subscriber tunes the TV (or set-top box) to display the messaging channel which is a known channel number provided by the broadcasting network operator. According to one embodiment of the invention, the channel number is common to all subscribers. The user dials an access code, which can be a short or a regular telephone number, which can be also toll-free. By dialing the access code or telephone number, the call is routed by the switch to the TV messaging gateway unit.

At step 1120, the TV messaging gateway answers calls using the telephony interface card 1070, and preferably receives or retrieves call details that include the subscriber's or the caller's telephone number. At step 1130, the TV messaging gateway accesses a database that may be either local or remote, and using the telephone number retrieved in step 1120 as a key, reads the subscriber's information from the database. This information includes the subscriber's full

name, family members, office employees (if the mailbox belongs to an office), preferred language, and possibly encrypted password or PIN. In particular, the subscriber's information record contains the ID of the subscriber's set-top box.

If no record is found in the database matching the retrieved telephone number, the TV 5 messaging gateway concludes that the subscriber is calling from a location other than the default subscriber location, records this fact, and asks the subscriber to manually enter his current telephone number or a user's code (Step 1140). Following that, step 1130 is repeated once more to retrieve the user's information using the newly supplied telephone number or user's code.

10 In step 1130 there can be another situation, where the subscriber is calling the system from a location where there is no TV screen that is capable of displaying the image information that is generated by the TV messaging gateway (for example: that location is not connected to the broadcasting network). In such a case, the TV messaging gateway has no means for interacting with the user. Recognizing this, at step 1185, the user is transferred to a messaging system 15 adapted to interface with a user via telephony, as commonly known in voice mail systems. Alternatively, the TV Messaging Gateway may incorporate an additional component to handle a telephony only interface, in a similar manner to commonly available voice mail or unified messaging systems.

Using the subscriber's information, Step 1150 is executed. An addressed screen, in the 20 form of one frame or a short video clip, is generated by output module 1060 in TV messaging gateway 170, and sent by TV messaging gateway 170 to the cable network to be broadcast to the subscriber's set-top box or television. One example of such a screen is shown in greater detail in Fig. 2. Using the subscriber's information record, the screen can be generated by the TV messaging gateway using the subscriber's preferred language, and optionally, can contain 25 commercials and other personalized or non-personalized information of pictures or voice. In the screen, the user is asked to key-in his or her password or PIN (personal identification number). This is done using the touch-tone keys of the telephone, and is converted to digits that can be processed by a computer using DTMF detection circuitry that is located on board the telephony interface card and commercially available, or in any other manner. The password entered is

5 encrypted, and the result is compared against the encrypted password that is stored as part of the subscriber's information record. If the password matches, step 1160 is executed. If the passwords do not match, Step 1170 is executed. Alternatively, the user can speak the PIN to a microphone, and speech recognition circuitry or software that is located either at the subscriber premises or at the head-end office, translates the spoken words into input commands.

Another way to verify user access authority is by using speech-recognition software that uses speech comparison technology to compare the spoken password to a password stored in the TV messaging gateway or in the unified messaging system.

10 The TV messaging gateway reaches step 1170 if there is either an error in the password, or if the subscriber is trying to retrieve from a location that is in the TV messaging server database, but different than the subscriber's default location. For this reason, the TV messaging gateway, at step 1170, displays an error screen, and asks the caller to enter again a telephone number, or user's code, in a process similar to step 1140. This time, the new user's information is retrieved from the database, as in step 1130, however the default set-top ID is not used.

15 Instead, the set-top ID retrieved according to the call details is used, to send the messages not to the default subscriber location, but to the current location of the subscriber.

20 In Step 1160, all the subscriber's details are known. The TV messaging gateway accesses the message store 1015 (typically in the messaging server coupled to, or in the same system as, the TV messaging gateway). The message store can be accessed using standard protocols, such as IMAP4, POP3, VPIM or any other standard or proprietary message control protocol.

There may be two cases within step 1160: either the mailbox is empty, or there are messages (either new or reviewed). If there are no messages in the box, then step 1190 is executed. Otherwise, step 1180 is executed.

25 In step 1190, which is executed whenever there are no messages in the mailbox, a message is displayed that informs the subscriber (or user) that this is the case. Step 1195 is executed after the subscriber has chosen to exit from the system. This is a good-bye screen. An example of one possible layout of such screen is shown in Fig. 7.

In step 1180, a message list display screen is presented to the subscriber. This screen contains a list of messages and potentially also folders, and the subscriber uses the input device to send commands to the TV messaging gateway. This process is described in greater detail with regard to Fig. 12.

5 Fig. 12 is a flowchart describing the interaction of the subscriber with the system using a telephone, according to one embodiment of the invention. This flow-chart is executed when the subscriber views a TV screen, an example of which is illustrated in Figure 3. This screen is generated by the TV messaging gateway at step 1200, and is transmitted to the subscriber's TV screen. The list of messages is acquired from the messaging server or servers coupled to the TV 10 messaging gateway, using the selected folder (see description for step 1227 below). If no folder was selected, the television messaging gateway defaults to a main or an inbox folder. In step 1210, the program waits for the user to use the touch-tone keys of the telephone. The DTMF tones generated by the telephone keys are intercepted by the telephony interface card 1070 and converted to data processed by the CPU 1020. The flowchart continues to steps 1231, 1230, 15 1229, and 1228 upon receiving the keys 1,2,8 and 5, respectively. It should be noted that these keys are used here as an example only, and any convenient manner of input may be utilized for accepting user commands as described above. Blocks 1230 and 1229 are the cursor movement controls. In each of these blocks a new screen is generated in which the highlighted line is moved either down one line or up one line. In case there are more lines than the number of lines 20 the screen can display, a vertical scroll operation takes place. In this operation, the location of the highlighted line remains, but the content of the line changes, as the entire list of messages is scrolled either up or down, as may be the case. In block 1228 the "select" mark 330 is filled or cleared. Checking the select key (key 5 in Fig. 12) first selects the line and selecting it again clears the select mark.

25 In step 1231 the system waits for an additional DTMF key, as all two digit selections in this example begin with '1' followed by another digit. Step 1221, 1222, 1223, 1224, 1225, 1227 and 1229 are executed when the user presses keys 1,2,3,4,5,7 and 9, respectively. If the user did not press a key during a pre-defined time-out period (typically, one or two seconds), control returns back to step 1210.

In step 1221, play message operation takes place. Here, a new video screen is generated and transmitted to the subscriber's TV screen. The television messaging gateway generates a different screen, depending upon the message type. Appropriate screen examples have been described in Fig. 4, 5, and 6.

5 Step 1222 is used for forwarding a message. Here another video screen is generated, which asks the subscriber to input the number of the subscriber to which the message will be forwarded, such as by using the telephone keypad. Care should be taken not to allow a subscriber to forward a message to another subscriber who does not allow this transfer. According to one embodiment of this invention, each subscriber's information record also holds 10 a list of other subscribers that he or she can accept the operation of message forwarding from. In addition, if the messaging server supports a status of "reviewed" or "saved" for a message, a command is sent to the messaging server from which the message was retrieved, to change the status of the message.

Step 1223 is the delete message. In this step, the television messaging gateway sends a 15 delete command to the messaging server at which the message was originally stored, using the ID of the message that was originally retrieved from the messaging server when the list of message was acquired from it. In addition, another video screen is generated, in which the line containing the deleted message is omitted. According to another embodiment of the invention, the message will be marked as "deleted" on the screen (using a different color, for example), 20 and the actual deletion operation from the messaging server will take place only when the subscriber exits from the service. This allows the subscriber to cancel the delete operation, if he or she does so before logging out.

Step 1224, if the identity of the party that left the message is known, then a reply operation 25 can take place. In this operation, a new screen is generated, asking the subscriber to either record a voice message as a reply, or if there is a keyboard attached, to type a textual reply. The reply is then either moved to that party's mailbox, if it exists on a messaging server attached to the television messaging gateway, or is packed as an attachment or a body of an e-mail and is sent back using e-mail.

Step 1225 provides an additional screen that allows the subscriber to alter some mailbox properties, such as changing password or PIN, and create or remove folders, if applicable.

Step 1227, a new video screen is generated, in which a list of the folders of the subscriber 5 folders is presented, in a way similar to the display of the list of messages. Here, the subscriber scrolls up or down the list, and selects a folder. Upon selecting a folder, control returns to step 1200, together with a new video display, containing a list of messages. This time the messages listed are the messages that are in the selected folder.

Step 1226, is the service exit or the logout step. Here a new video display is generated and transmitted to the subscriber's television. An example of such a screen is shown in Figure 7.

10 It should be noted that since the change rate of the screens for one subscriber operating the system is relatively slow (one screen per 5 or more seconds, typically), there is a considerable conservation of network resources, compared to a movie or a program that is transmitted on a video channel. A frame once every 5 seconds is 125 times slower than a video of 25 frames per second. In addition, the nature of most of the messaging screens presented here is highly 15 compressible, which also contributes to saving in network resources. As a result, one messaging channel can serve many concurrent subscribers simultaneously.

20 Fig. 2 shows a preferred implementation of a welcome or a login screen that is sent to the subscriber's TV screen by the TV messaging gateway. It contains a header 200 that identifies the commercial name that was chosen for the service. It could also contain a commercial 210, and a personalized welcome message 220. Typically, when a subscriber accesses the system, the subscriber's details (subscriber's information record) are accessed from a database. Some of the fields in this record may, optionally, contain information that can assist 25 in selecting an appropriate commercial out of a commercials database. For example, commercials can be selected and displayed according to language, or by interests of the subscriber.

Fig. 3 shows a preferred implementation of the messages screen. The screen contains a header 300 that defines the commercial channel name. The main (central) block 310 of the screen is the messages list block where the messages are stored, and is a scrolling window into

the messages. Around the main block 310 are the options that the user can select. The options can be selected, for example, by keying-in the numbers using the telephone, or by pressing the numbers on a remote-control, or by pressing the numbers from a keyboard (if present) or by moving a pointer to the key area using an appropriate remote control unit and a digital set-top box, or by speaking a command word such as "play" to the telephone microphone, or in any other fashion. Items 311 through 319 are examples of possible options that can be used.

Inside the main block 310 there is a list of messages. The columns are denoted by 336, 340, 345, 350, and 355. The leftmost item in a message line is the message serial number 335. According to one embodiment of the invention, the user can select a message by typing its 10 serial number using the telephone keypad, or by typing a prefix (like #) followed by the message number or by speaking the message number using the telephone microphone. Next to the message number there is a 'select' indicator 330. If the message is selected, there is a cross or filling in this box. Next, the person that sent the message 336 is listed, if known. In case of a fax, the CSID (calling fax ID string) that potentially may be sent by the sending fax machine is 15 indicated. Further to the right, is the date 340 and time 345 when the message was received, and an indication of the content 350 or type of the message (voice, fax, video, e-mail etc.). According to another embodiment of the invention, several types of messages may be combined, such as voice annotated fax (voice and fax together as part of a compound message).

The rightmost field in Fig. 3 central block is the note or the subject field 355. With e-mail 20 there is an attached subject field, and it is displayed here. Some unified messaging systems allow the subscriber to add a similar note to any message regardless of its type, and this field is displayed in the note column, if it was inserted by other means, such as computer access to the messages. In another embodiment of the invention, an attached keyboard that is connected to the set-top box can be used to edit or to create the note field. In yet another embodiment of the 25 invention, speech recognition technology (such as dictation programs available commercially from Dragon systems, UK, for example) can be used to convert a dictated note into text. In such an embodiment, an additional option should be presented on the TV screen, which when selected, causes an edit subject screen to appear. Examples of 'edit note' screens can be found

in many commercially available unified messaging systems, such as PrimeVoice model 6000 provided by Unitel, Or-Yehuda Israel.

The subscriber uses the touch-tone keys to move the highlighted line up or down each time he presses designated keys 320. (In Fig. 3, these keys are "2" for up, and "8" for down. 5 However, any key combination may be used). To select a message, he presses key "5". Alternatively, the subscriber speaks commands, such as 'Line up' or 'page down' and the gateway, using speech recognition, responds to these commands.

Fig. 4 illustrates one example of a screen 400 that is presented when the subscriber selects to play a voice message, according to a preferred embodiment of the invention. The 10 voice can be played using the hand-set or speaker of the telephone, or using the TV speaker. The advantages of playing voice using the hand-set of the telephone are greater privacy, and the fact that it consumes less system and network resources. Alternatively, the voice message can be compressed and transmitted via the video channels of the broadcast system to the subscriber's TV set. The subscriber can control the mode of play, for example, by pressing key 15 "7" as shown in block 450.

Another component of the play voice screen is the play duration bar 420. This bar shows the play progress of the message. Typically, it is updated once every second or several seconds, depending upon the bandwidth available for the transmission of the screens. At the rightmost side of this bar, the total duration 425 of the message is indicated.

20 Other components of this screen may be urgent and private message indicators (430 and 435), the "from" field 440 of the message, as explained above, and the date when the message was received 445. There is also a key instruction block 450, that instructs the subscriber which 25 keys to press using his telephone. In the illustrated embodiment, key "1" is used for pause control (pressing it once causes temporary stop in play, pressing it again resumes play from the same point it was paused), key "2" is rewind the message to the beginning, key "3" skips the entire message to the end of it, 4 is fast forward, and "5" and "6" are volume control.

Fig. 5 is an example of a screen 520 that is presented when a fax message is shown. The central portion of the screen (530) is the region where the fax is displayed. The bottom part 540

is the region where the available options for the keys are presented. Above the central region is a line 510 that shows who sent the fax (if known), when it was received, how many pages it contains, and the number of the current page that is displayed.

The fax is converted into a video format and sent, via the cable network, to the user's television screen. Thus, the fax which is received is not transferred "as is" to the TV screen for viewing, but converted into a video segment or frame which facilitates viewing, editing and other operations the user may perform thereupon using an input device.

One preferred method of presenting the fax on the TV is disclosed in Israeli patent application no. 120709, entitled METHOD AND APPARATUS FOR TRANSFERRING GRAPHIC AND AUDIO INFORMATION BY MEANS OF VIDEO COMMUNICATION, to the present Applicant. According to this method, the graphic information constituting the fax is converted to a bitmap using commercially available software, such as Victor image processing library. This bitmap is a high-resolution format of black and white dots, having approximately 1720 dots per line, and a few thousands of lines per page, depending upon the fax resolution and the page length. This high resolution bitmap is converted from a high resolution format to a low resolution format, according to the size of the window 530 on the screen that is dedicated for the fax display. The size of the window is measured also using pixels, or picture elements. This is carried out by any conventional image resizing method, such as bi-linear interpolation. Optionally, if it is desired to improve legibility or sharpen the picture, the data can then be passed through a high-pass filtering algorithm, as known. The resultant image is inserted into the generated screen, and the screen is sent to the television set, as described above.

Fig. 6 is an example of a screen that is displayed when playing back a video message. A video message contains image and voice. It is possible to separate the voice from the image and play the image on the TV screen, and the voice using the telephone handset as explained, or to play the entire video message using the TV facilities. In a preferred embodiment of the invention, the TV set is used to play both the audio and the visual components of the message. A screen 600 is displayed, with a line 610 on the top of the screen indicating details of the sender, date and time received, and length of the message. A video play duration bar 620 is provided to indicate the play progress of the message. The central portion 630 of the screen is the region

where the video is displayed. The bottom part 640 is the region where the available options for the keys are presented which can include, for example, zoom in, zoom out, change volume, etc.

Fig. 7 is an example of a closing screen 700 that is displayed when the subscriber has finished and selected the "exit" button. Region 720 is a place for commercials, as explained above. Region 710 is a good-bye message that, optionally, can be personalized for each subscriber by the TV messaging gateway.

Fig. 8 is another embodiment of the present invention, illustrating the construction and operation of a TV messaging gateway according to the invention in the environment of a combination of PSTN telephony and a satellite TV broadcasting network. According to this embodiment, the satellite 856 is the carrier that delivers TV broadcasts to the subscriber's home 810, and the public telephone network 845 serves as the means to connect the subscriber's telephone 825 to the head-end TV messaging gateway 870.

In the head-end or the main office 865, one or more messaging servers 860 are connected to the TV messaging gateway 870, as described with regard to Fig. 1. The telephone 825 located in the subscriber's home is a PSTN telephone. The subscriber dials a telephone number of the TV messaging gateway 870 and identified himself to the system by means described. The TV messaging gateway then generates and transmits the video screens that are intended for handling messages (or instructions for synthesizing such video screens), as described, to the set-top box or television in the subscriber's home through satellite 856.

The equipment shown in Fig. 8 as being used in the head-end or main office need not physically be located at one location, but can alternatively belong to, and be operated by, different operators, as long they are connected one to each other as shown, or in a similar way in the spirit of the invention.

Fig. 9 is another embodiment of the invention where Internet Protocol (IP) telephony is used together with a cable network system. The overall plan is similar to the one described in Fig. 1, except that the call that arrives to or from the public network (PSTN) is directed using known means to an IP network, such as, but not limited to, the Internet, and from there through IP telephony gateway 950 either to a subscriber, to a messaging server 960, or to the TV

messaging gateway 970, depending upon the dialed number and other considerations, as described above. The TV messaging gateway 970 is built and operated as described with reference to Fig. 10, except that IP telephony interface cards or IP telephony software are used, instead of conventional telephony interface cards 1070. Examples of suitable IP telephony interface cards are those manufactured commercially by Audiocodes Ltd., Israel and by Dialogic, USA. An example of IP telephony software is the software available commercially by ElMedia and Lucent, USA, or by RADVision, Israel. It will be appreciated that IP telephony can also be used with other means of broadcasting such as satellite, as described with regard to Fig. 8.

Fig. 13 is a flow chart according to a preferred implementation of the invention showing schematically how a TV messaging gateway handles e-mail relay or sending e-mail to another e-mail user (world-wide). For an in-coming e-mail message, the TV messaging gateway displays the e-mail on the TV screen (step 1310), using a screen similar to the fax message display and control. Software for the translation of the textual or the graphical e-mail into a graphical screen is available commercially by Imaging technology, USA, or by other companies that offer image processing or rendering software. The graphical screen is converted to an analog or digital video signal, as described above. After the subscriber has finished reading the e-mail message, he can select (step 1320) to send back a message (a reply). Usually, when someone sends an e-mail message, he expects to receive the reply back as e-mail, as well. However, when the subscriber is viewing the e-mail message using the TV screen, he does not have necessarily a keyboard to type the reply or the e-mail message. In these circumstances, in step 1330 the subscriber uses the telephone microphone or handset to record a voice message, using the voice recording capabilities of the TV messaging gateway's telephony interface card. In step 1340, the TV messaging gateway plays back the recorded voice message to the user, using the telephone speaker or handset, or, alternatively, using the TV speaker as described earlier. The subscriber can, using the telephone keypad, either acknowledge the recording (step 1350) or re-record the reply message. If the subscriber has acknowledged the recording, then at step 1360, the recording is converted from the condensed format it was recorded with to a format suitable for playback in most computer operating systems (such as a .WAV file format commonly used in Microsoft Windows™ environment) and is added to an outgoing e-mail as

an attached file, as known with regard to e-mail messages. Alternatively, speech recognition technology, such as speech dictation software can be used to convert the user's spoken words into text, that is then sent as an e-mail text message.

In other cases, the subscriber may want to send an outbound e-mail message (as opposed to 5 a reply, where the subscriber first receives an e-mail message). Step 1315, a list of known e-mail recipients is displayed on the screen. The list can be taken from a user's address book that is saved either in the TV messaging gateway or on another system. Step 1325, the subscriber scrolls up and down in the list, using the keypad keys of the telephone keypad, or using speech, in a similar way that was explained earlier for selecting a message from a list of 10 messages. To select an address, the subscriber presses a key (<5>, for example). To send e-mail to all selected addresses, the subscriber uses another key (<6>, for example). Following that, steps 1330 to 1360 are executed, as explained above. Another way of selecting the recipient's address may be speech recognition technology that recognizes spoken names. Such software is commercially available from Phonetic Systems Ltd, Israel.

15 Fig. 14 is a flow chart describing the process of generating a message-waiting indication at the subscriber's television. Message-waiting indication is an integral part of most messaging systems, and an important feature, since it notifies the subscriber of the existence of messages in his or her mailbox. In step 1410, a message or messages arrive to the mailbox located at the messaging server described above. Step 1420, the TV messaging gateway is notified of the 20 existence of messages. This can be done either by having the TV messaging gateway periodically check the messaging server (polling), using the interface, such as IMAP4, between the messaging server and the TV messaging gateway, or by having a mechanism by which the messaging server notifies the TV messaging gateway whenever a message arrives, or a message is heard (so that the TV messaging gateway can refresh the screen that was previously sent to 25 the subscriber's TV by a new screen, reflecting the new status). In step 1415, when a message was heard or deleted, the TV messaging gateway is notified of the updated status of the messages.

In step 1430, the TV messaging gateway retrieves the subscriber's information record from a database. Part of this record are the subscriber's TV screen ID (or set-top ID), and potentially

the subscriber's preferred language. The TV messaging gateway generates, in step 1440, a video screen (single frame) or a video transmission (continuous), depending upon the type of the set-top box that is at the subscriber's home (also listed in the database), and addresses it to the subscriber in step 1450. Alternatively, if the set top box at the subscriber's home includes a 5 video generation module capable of displaying menus, the TV messaging gateway can design the appropriate video screen or menu and send instructions to the set top box to synthesize the screen or menu, according to those instructions.

An example of a message indication screen 1510 that is sent to the subscriber's home, according to a preferred embodiment of the present invention, is shown in Fig. 15. The screen is 10 generated according to the preferred language of the subscriber. Item 1520 is a header, item 1530 is an example of a body message. The telephone number 1540 is an example of a short telephone number or access code that is assigned according to the local needs of the telephony provider. It will be appreciated that this screen can be personalized by the TV messaging gateway for the specific individual subscriber. The subscriber views this screen each time he or 15 she wants to check for messages, by changing the television channel momentarily to the messaging channel. If there are messages, an appropriate message will be displayed on that channel's screen and the subscriber can then log on to the system to retrieve the message or messages. Alternatively, if the set-top box supports super-imposing of an icon on all channels, then if there is a message, a special small icon can appear on the television display on all 20 channels.

Fig. 16 is a schematic illustration of another embodiment of the invention, where a TV messaging gateway 1670 is connected simultaneously to more than one messaging server, here illustrated as a voice messaging server 1660, a fax messaging server 1661, and an e-mail server 1662. Each messaging server preferably is connected using a messaging protocol such as 25 IMAP4, VPIM, POP3 or a proprietary protocol. In this embodiment, the integration of the different messages into a single list on the TV of the subscriber is done by the software in the TV messaging gateway. Also, whenever the subscriber wishes to retrieve a message using the TV set, the TV messaging gateway is responsible for retrieving the message from the appropriate server.

In this embodiment, voice messaging server 1660 (such as Trilogue Infinity, commercially available from Comverse Technologies, NJ) and fax messaging server 1661 (such as RightFax, commercially available from AVT Corp., WA, USA), are connected to the telephony network through a telephony switch 1650. E-mail server 1662 is also connected to the Internet.

5 It will be appreciated that whenever it is stated that the TV messaging gateway is connected to a messaging server, alternatively, the TV messaging gateway can be connected to several messaging servers, each one for a dedicated type of message, such as illustrated in Fig. 16.

10 Fig. 17 is a schematic diagram of another embodiment of the invention where the invention is used by a telephony provider (a telco) that has a messaging server attached to more than one TV messaging gateway. Each TV messaging gateway can be connected to a different television broadcasting network such as cable network and a satellite network. In this embodiment, the telecom operator operates a messaging service, and wants to allow television subscribers (both cable and satellite subscribers) to have access to their messages using their televisions. In this 15 case, this operator connects two television messaging gateways (1770 and 1771) to a single server 1720 and telephony switch, each television messaging gateway transmits the video to a different broadcast network, denoted as 1722 (a satellite television broadcasting) and 1716 (a cable television network). Each head-end typically broadcasts television to a different population of subscribers (1717 and 1718).

20 It should be noted that the exact configuration of the head-end systems described in this figure may change, and be similar to the one described in figs. 1, 8 and 9 yet stay within the spirit of the invention.

25 Fig. 18 is a schematic diagram of another configuration of the invention where the telephony services are supplied by an entity separate from the TV broadcasting operator. The subscriber uses means such as call forwarding to re-direct a telephone call to a messaging server connected to a TV messaging gateway. In such a configuration, if a call arrives to the subscriber's telephone 1820, and the call was not answered within a specified number of rings, or if the subscriber manually selected to redirect messages, a call redirecting device 1875 located at the user premises or a call redirecting mechanism within the PSTN 1800 reroutes the

call to a specific mailbox on messaging server 1860 which is connected a television messaging gateway 1870. TV messaging gateway 1870 is substantially similar to TV messaging gateway 170 in Fig. 1. The messaging server 1860 then accepts the message for a user associated with the specific mailbox. Alternatively, the messaging server asks the caller to specify a mailbox 5 and directs the message to the specified mailbox. Operation proceeds as described above.

While there have been described what are at present considered to be the preferred embodiments of this invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention and it is, therefore, aimed to cover all such changes and modifications as fall within the true spirit and 10 scope of the invention.

CLAIMS

What is claimed is:

1. In a television broadcast system having: a central location having at least one video source connected to a downstream network constructed to carry video signals and selectively distribute said video signals to a plurality of addressable remote terminals connected thereto, wherein each said remote terminal is constructed to selectively receive and display said video signal on a television screen; operating in conjunction with a messaging server constructed to store and forward messages; and an upstream network capable of delivering user input signals from a remote location to said central location, an apparatus for selecting and displaying multi-media messages, comprising:

10 a television messaging gateway having:

15 a message control interface coupled to said messaging server for controlling at least one message therein;

an output module coupled to said downstream network for generating information signals corresponding to said message, to be fed into said downstream network for display on a television set coupled to one of said addressable terminals; and, logic to direct said message between said message receiving interface and said output module.

2. An apparatus for selecting and displaying multi-media messages as in claim 1 wherein said gateway further includes an input device interface connected to said upstream network for receiving user input signals.

20 3. An apparatus for selecting and displaying multi-media messages as in claim 1, wherein said message has address information associated therewith, to associate said message with at least one user, and said logic is constructed to direct said message to an addressable remote terminal associated with said address information.

25 4. An apparatus for selecting and displaying multi-media messages as in claim 2 wherein said logic is further constructed to interactively respond to said user input signals, and selectively handle messages associated with a user.

5. An apparatus for selecting and displaying multi media messages as in claim 1 wherein said logic is further constructed to display a list of messages available for a specific user, to enable said user to select at least one message of said list for handling.
6. An apparatus for selecting and displaying multi-media messages as in claim 2 wherein said television messaging gateway further comprises storage means to store a plurality of said messages and addressing information associated therewith.
7. An apparatus for selecting and displaying multi-media messages as in claim 2 wherein said user input signals include a password, before messages corresponding with said user are fed into said downstream network.
10. 8. An apparatus for selecting and displaying multi-media messages as in claim 1 wherein said television messaging gateway further comprises means for notification of receipt of a message.
9. An apparatus for selecting and displaying multi-media messages as in claim 3 wherein said user input signals are used to identify and select an addressable terminal to direct messages to.
15. 10. The apparatus for selecting and displaying multi-media messages of claim 2 wherein said television messaging gateway further comprises a user interface module, responsive to user input signals and constructed to cause generation of video information to display data corresponding to the type and number of messages directed to a user, and to facilitate user selection of messages to be directed to said addressable terminal.
20. 11. The apparatus for selecting and displaying multi-media messages of claim 2 wherein said input device interface comprises a telephony interface.
12. The apparatus for selecting and displaying multi-media messages of claim 11 wherein said user input signals are inputted using a telephone.
25. 13. The apparatus for selecting and displaying multi-media messages of claim 2 wherein said television messaging gateway also comprises receiver means to receive user generated messages to be sent by said television messaging gateway.

14. The apparatus for selecting and displaying multi-media messages of claim 1 wherein said messages are of a type selected from audio messages, video messages, fax messages, text messages, multi-media messages, and e-mail messages.

15. The apparatus for selecting and displaying multi-media messages of claim 1 wherein said downstream network is selected from a cable television network, a satellite television network, a terrestrial video distribution network, a radio frequency video distribution network, a cellular network, a hybrid network, or a combination thereof.

16. The apparatus for selecting and displaying multi-media messages of claim 2 wherein said upstream network is selected from a group consisting of a telephony network, a bi-directional television distribution network, a wireless network, a dedicated wire network, or a combination thereof.

17. The apparatus for selecting and displaying multi-media messages of claim 2 wherein said user input signals are selected from a group consisting of telephony input, touch tone signals input, voice input, remote control device input, pointing device input, and keyboard input or a combination thereof.

18. The apparatus for selecting and displaying multi-media messages of claim 1 wherein said television messaging gateway utilizes a television speaker as an output device.

19. The apparatus for selecting and displaying multi-media messages of claim 2 wherein said upstream network is a bi-directional television distribution network and wherein said remote terminal is adapted to send user input signals to said television messaging gateway via said upstream network.

20. The apparatus for selecting and displaying multi-media messages of claim 1 wherein said video signals comprises digital video signals and wherein said downstream network is constructed to transmit digital video signals and addressing information to address selected signals to a selected addressable terminal.

21. The apparatus for selecting and displaying multi-media messages of claim 1 wherein said messaging server is also adapted to receive e-mail messages

22. The apparatus for selecting and displaying multi-media messages of claim 2 wherein said television messaging gateway is coupled to an IP based network for receiving messages and user input therethrough.

23. The apparatus for selecting and displaying multi-media messages of claim 1 wherein said television messaging gateway is integral to said messaging server.

5 24. The apparatus for selecting and displaying multi-media messages of claim 1 wherein said television messaging gateway is located remotely from said messaging server.

25. In a television broadcast system having: a central location having at least one video source connected to a downstream network constructed to carry video signals and selectively 10 distribute said video signals to a plurality of addressable remote terminals connected thereto, wherein said remote terminal is constructed to selectively receive and display said video signal on a television screen; operating in conjunction with a messaging server constructed to store and forward messages; and an upstream network capable of delivering user input signals from a remote location to said central location; an apparatus for selecting and displaying multi-media messages, comprising:

15 a television messaging gateway having:

20 a message receiving interface coupled to said messaging server for receiving at least one message therefrom, said message having address information associated therewith, to associate said message with a user;

25 a video output module coupled to said downstream network for generating video information corresponding to said message, to be fed into said downstream network for display on a television set coupled to one of said addressable terminals;

30 logic to direct messages between said message receiving interface and said video output module;

35 an input device interface connected to said upstream network for receiving user input signals;

40 a storage device to store a database to correlate said addressing information with a specific user and addressable terminal; and,

wherein said messages are interactively displayed on a television screen coupled to said addressable terminal in response to user input signals entered by a user input device.

26. The apparatus for selecting and displaying multi-media messages of claim 25 wherein said
5 input device interface comprises a telephony network and said input device comprises a telephone interface.
27. The apparatus for selecting and displaying multi-media messages of claim 25 wherein said upstream network and said downstream network comprises a bi-directional television distribution network, and wherein said input device interface is coupled to said
10 bi-directional network for receiving user input signals therethrough.
28. Apparatus for remote viewing of selected messages, stored in at least one messaging server, at a subscriber remote receiving location having a television set, the apparatus comprising: a television messaging gateway coupling said messaging server to said television set so that the television set serves as an output device for messages stored or displayed by said
15 messaging server.
29. The apparatus according to claim 28, further comprising an input device interface for inputting subscriber commands to the television messaging gateway
30. A method for remote viewing of selected messages at a user remote receiving location comprising the steps of:
20 coupling a television messaging gateway to a television set; coupling at least one messaging server to the television messaging gateway; and causing said television messaging gateway to provide messages received in said messaging server to said television set for audio-visual display thereon.
31. The method according to claim 30, wherein said step of causing includes inputting user
25 commands to the gateway.
32. The method according to claim 30, further including the step of displaying at least a portion of said messages using video generation techniques.

33. The method according to claim 30, wherein said messaging server is an e-mail server, and further comprising the steps of creating and sending an e-mail message by voice via said television messaging gateway.

34. In a television broadcast system having a central location having at least one video source connected to a downstream network constructed to carry video signals and selectively distribute said video signals to a plurality of addressable remote terminals connected thereto, wherein said remote terminal is constructed to selectively receive and display said video signal on a television screen, a messaging server constructed to store and forward messages, and an upstream network capable of delivering user input signals from a remote 10 location to said central location, a method for selecting and displaying multi-media messages, comprising the steps of:

receiving and storing in the messaging server a plurality of messages directed to a particular user;

converting in a television messaging gateway at least some properties of said 15 messages to information signals; and,

selectively transmitting said information signals to a particular television set associated with said particular user for outputting said message therewith.

35. The method for selecting and displaying multi-media messages of claim 34 further comprising the steps of:

20 receiving user input signals via said upstream network;

selecting one or more messages in accordance to said user input signals; and,

25 converting at least some properties of said messages into information signals for output by said television set.

36. The method for selecting and displaying multi-media messages of claim 34 further

comprising the step of receiving user outgoing messages by the television messaging 25 gateway via said upstream network.

37. A method for selecting and displaying multi-media messages, comprising the steps of:

receiving and storing in a messaging server a plurality of messages directed to a particular user;
generating message management information screens in a television messaging gateway corresponding to said plurality of messages, and displaying said screens on a selected television set associated with said particular user;
5 receiving user input signals to direct said television messaging gateway to select at least one message for display; and,
synthesizing audio-visual television signals corresponding to said message for outputting by said television set.

10 38. The method for selecting and displaying multi-media messages of claim 37 wherein said step of synthesizing is performed by an addressable terminal physically located in proximity to said television set.

39. The method for selecting and displaying multi-media messages of claim 37 wherein said step of synthesizing is performed by said television messaging gateway physically located
15 remotely to said television set.



AGENT FOR APPLICANT

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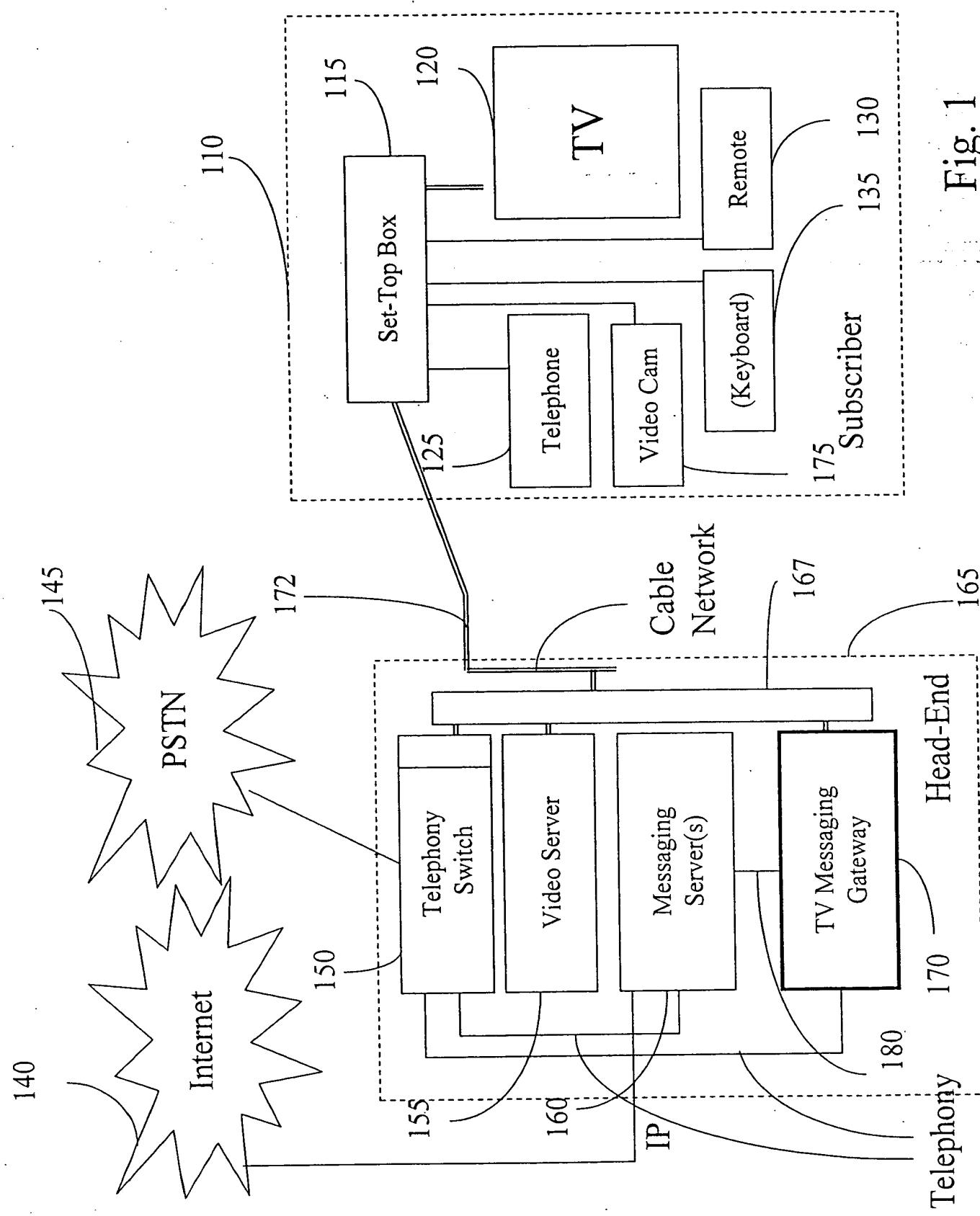


Fig. 1

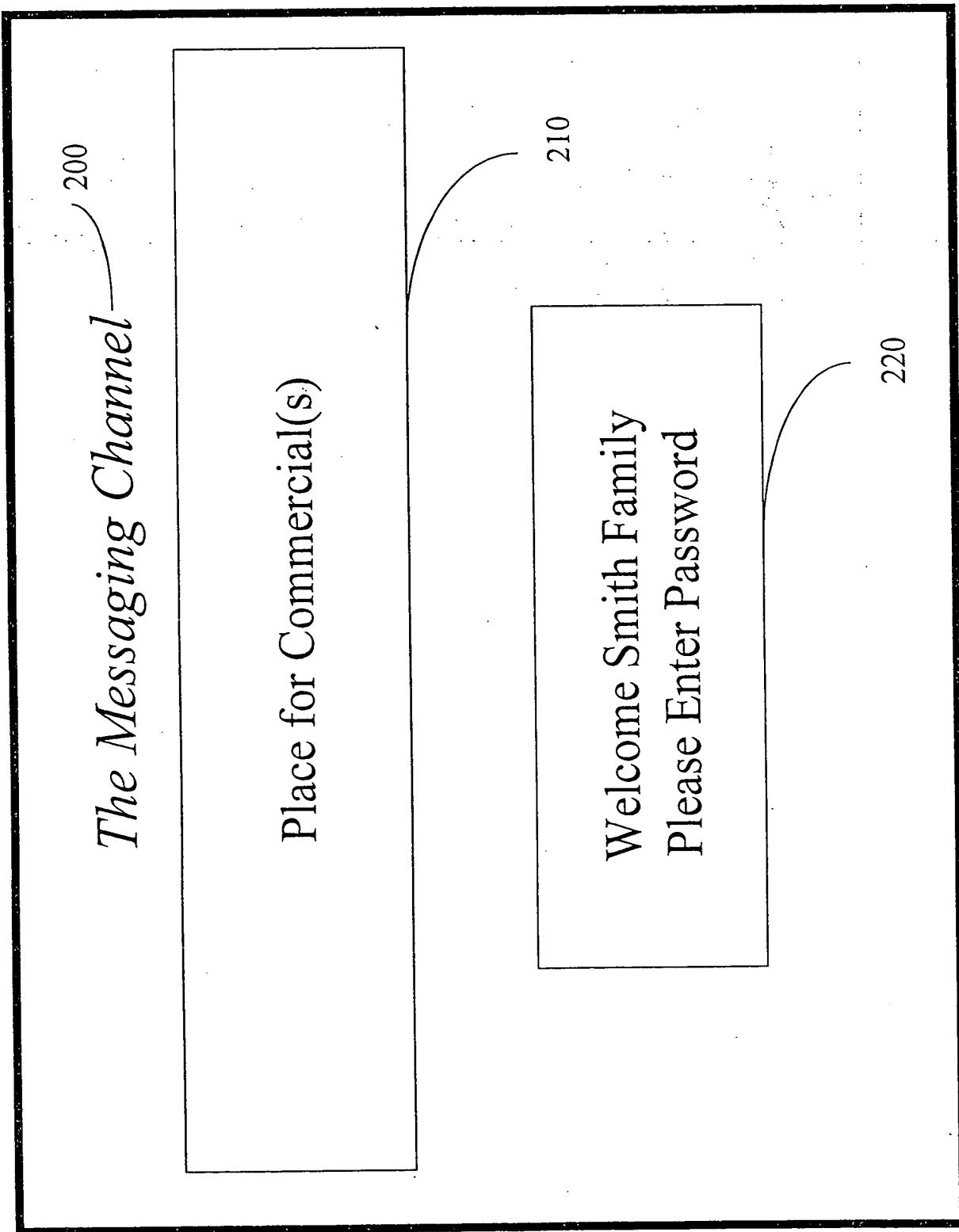


Fig. 2

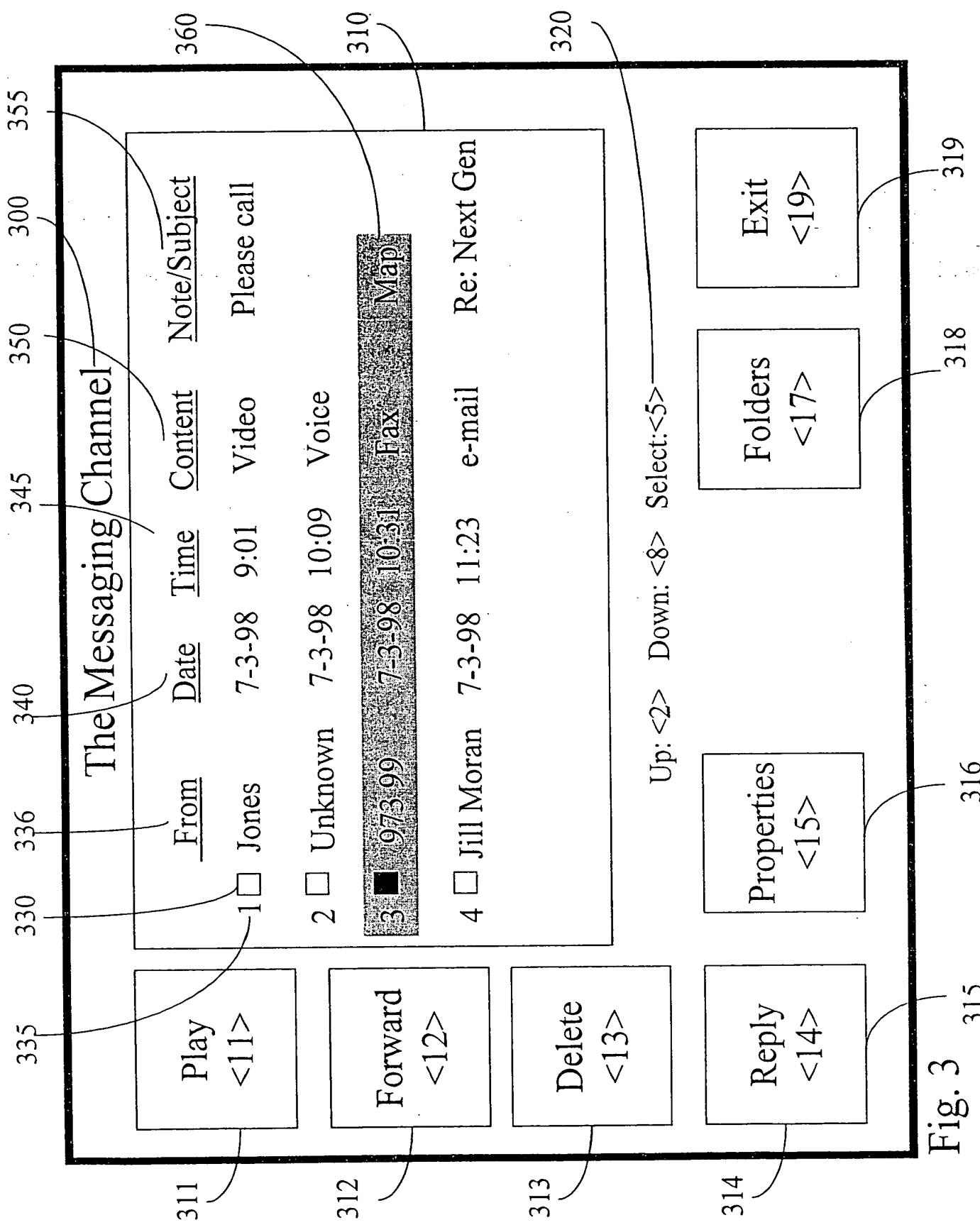
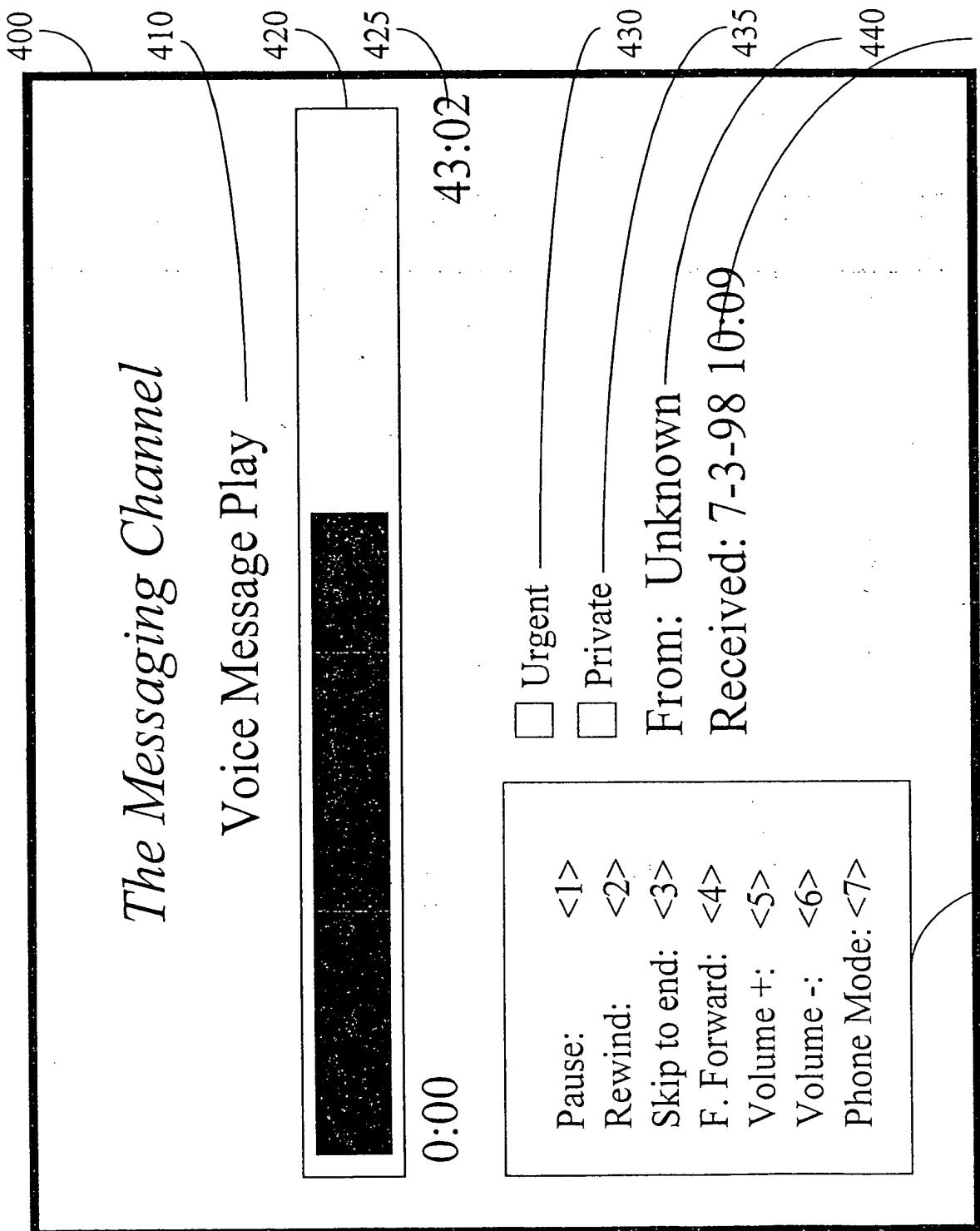


Fig. 3 315



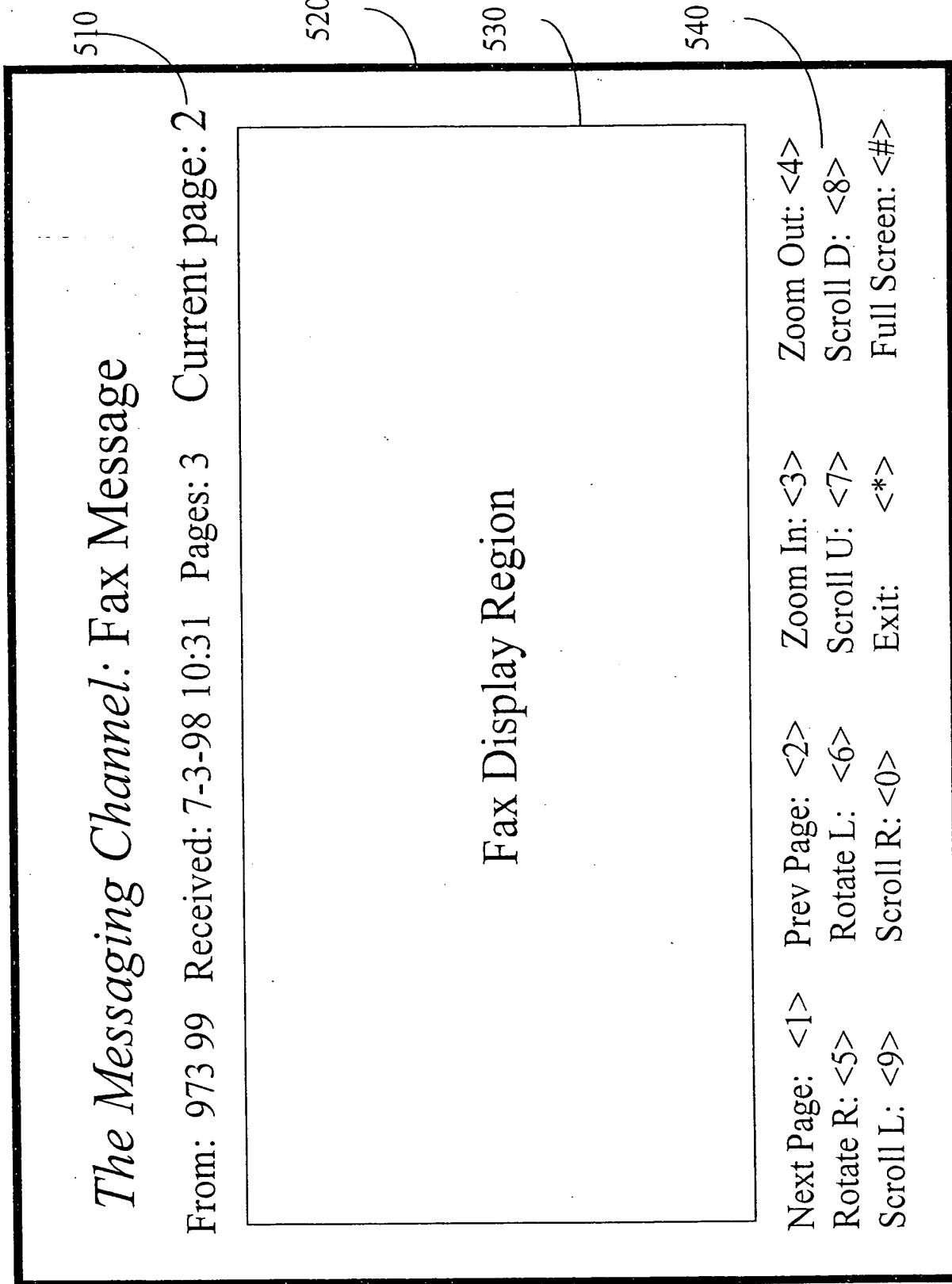


Fig. 5

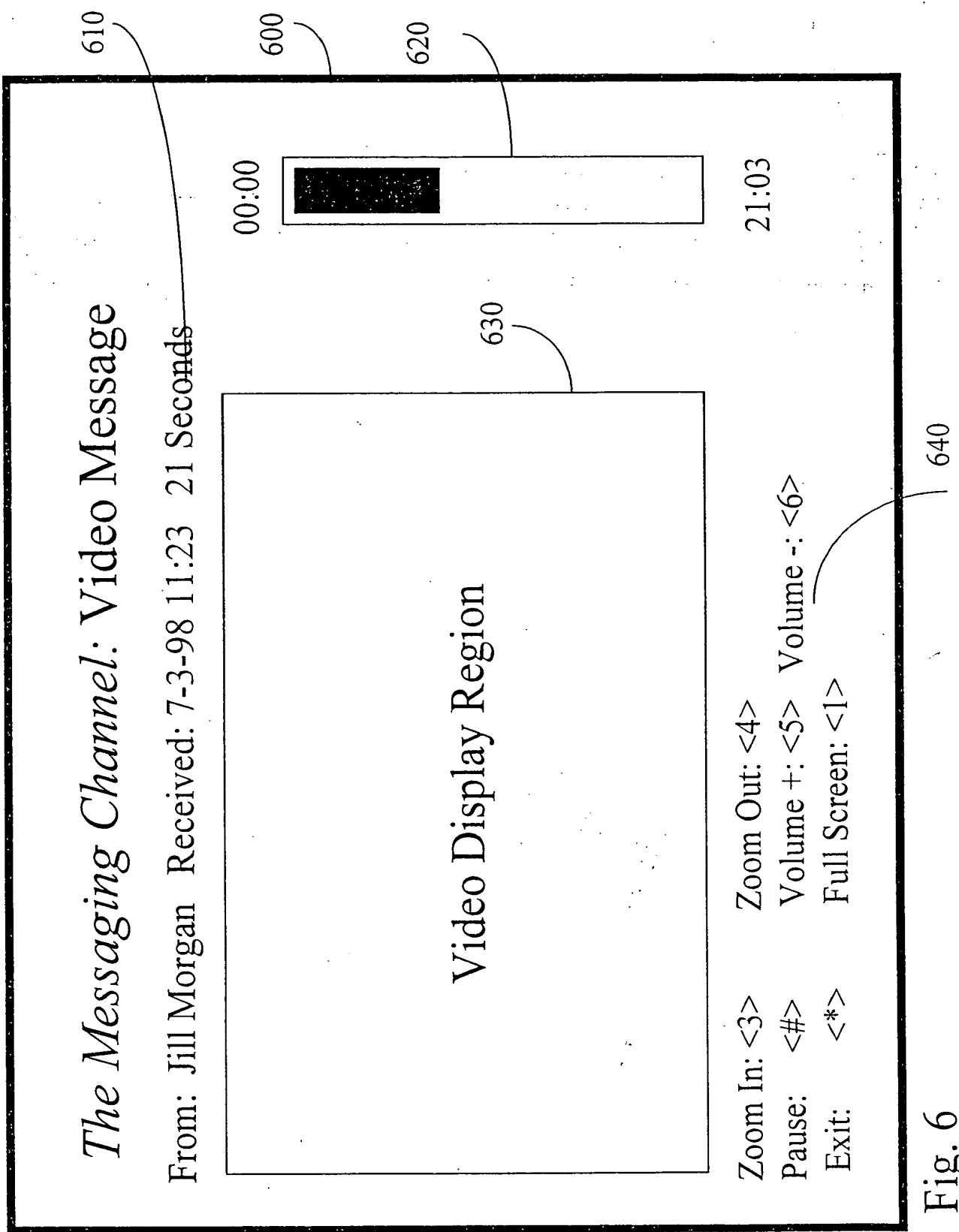


Fig. 6

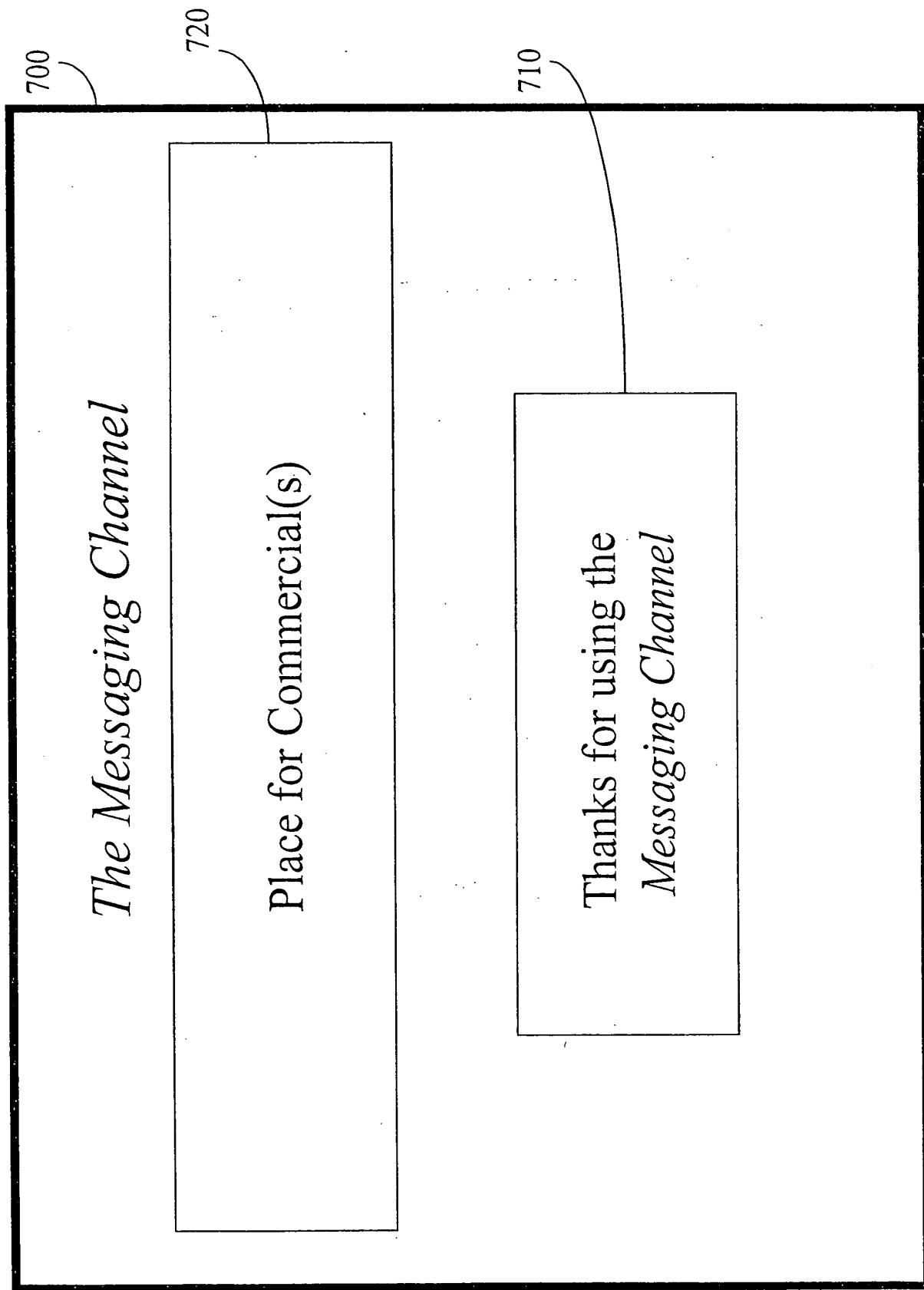


Fig. 7

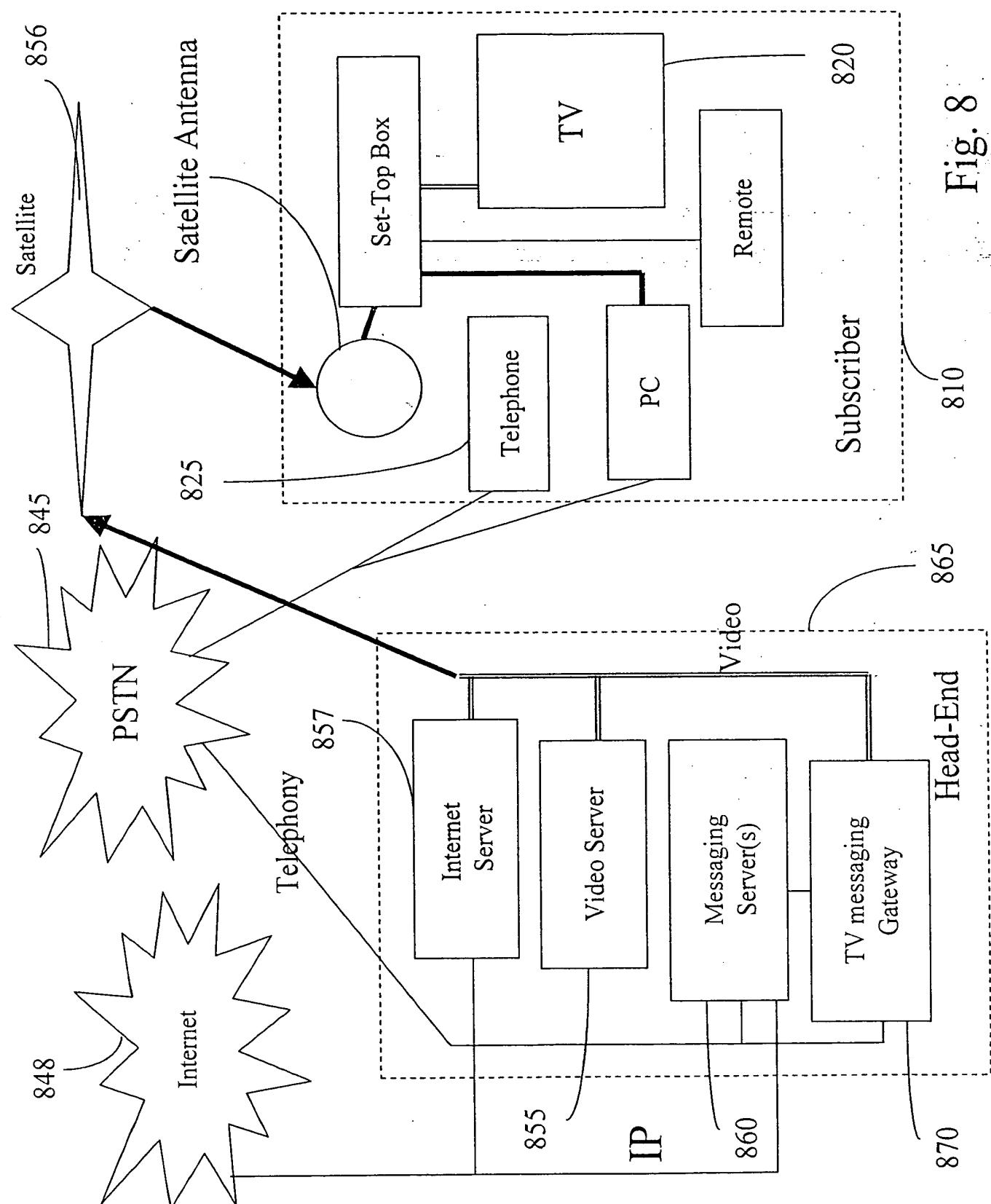


Fig. 8

810

865

Head-End

870

820

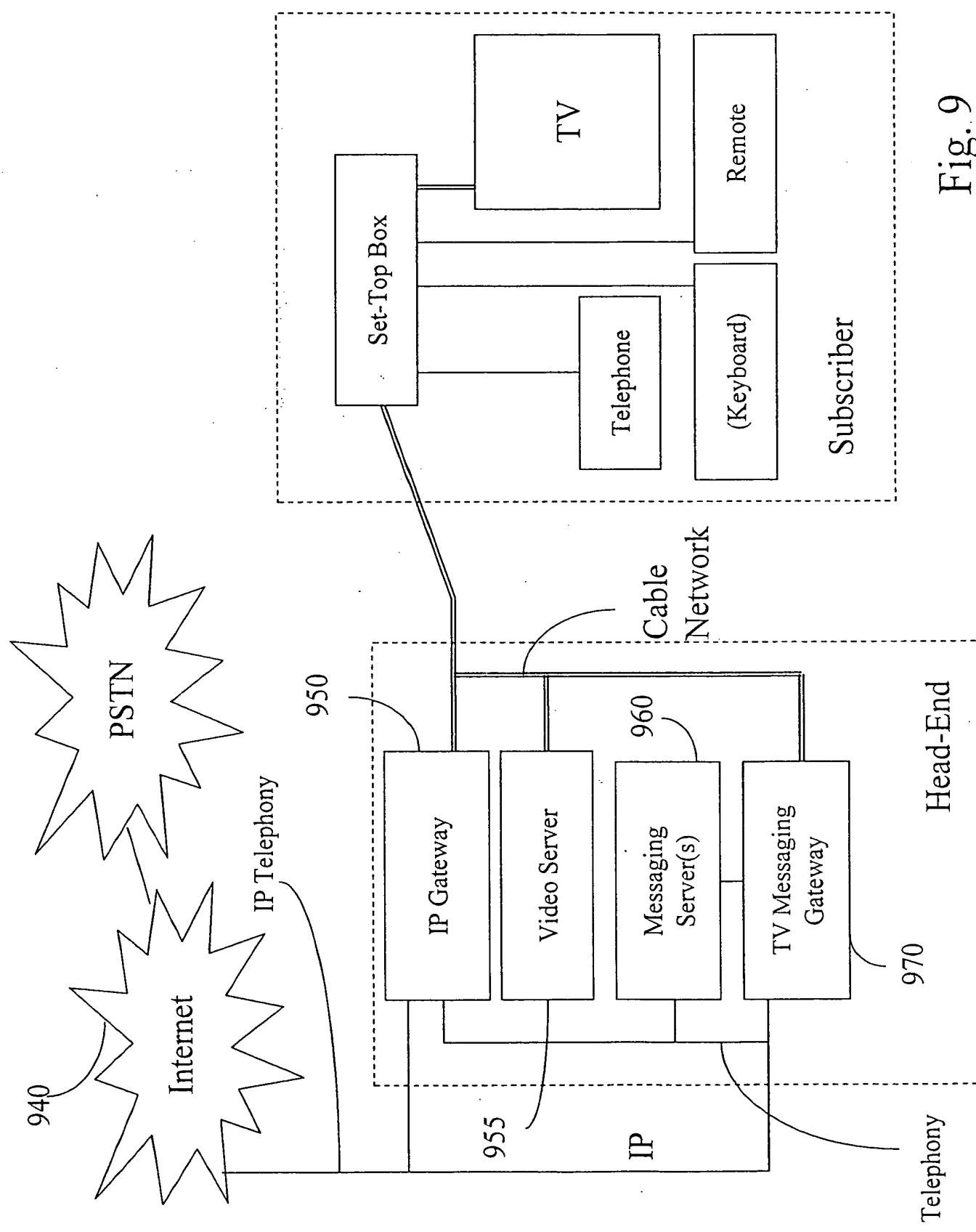


Fig. 9

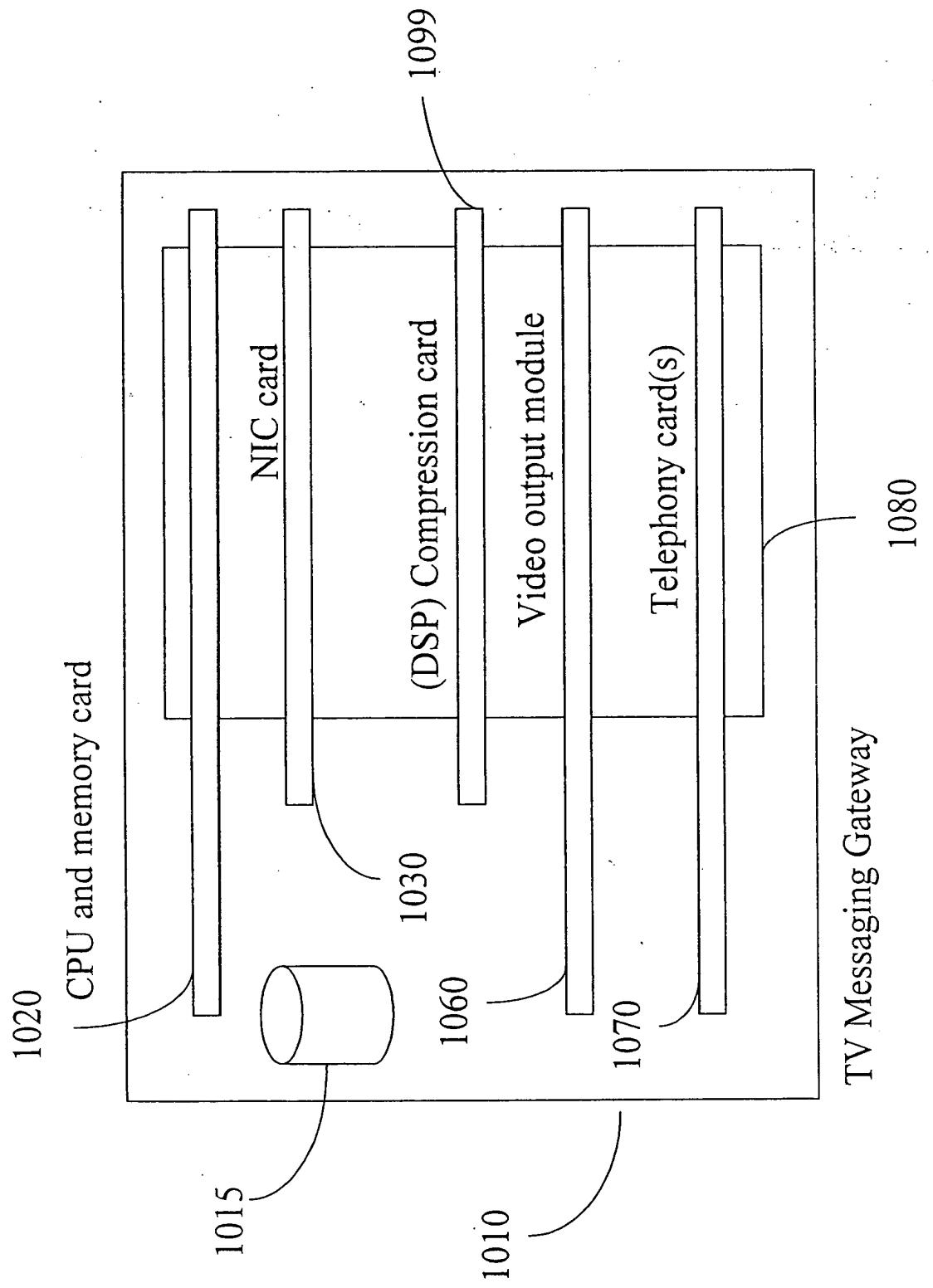


Fig. 10

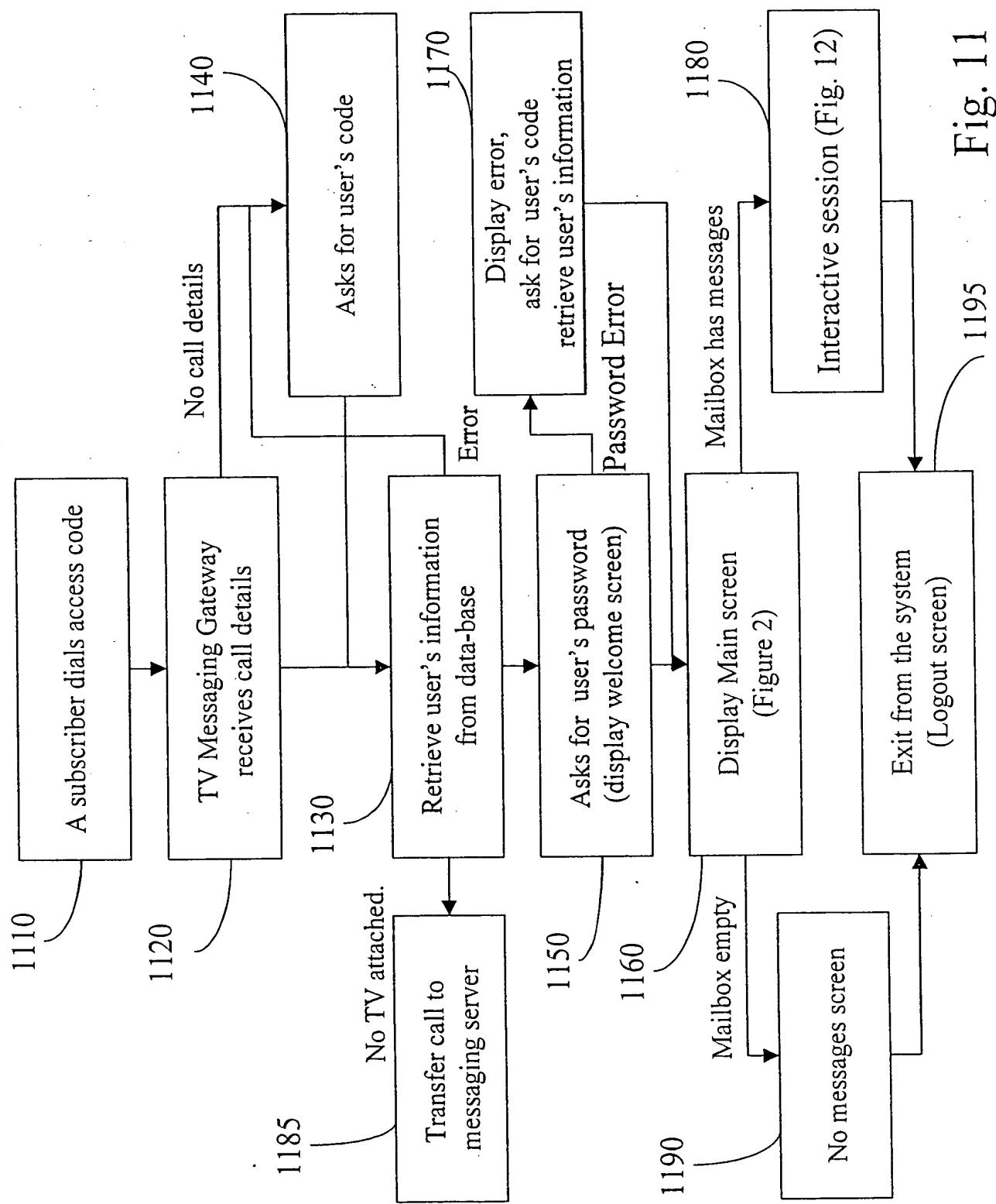


Fig. 11

1195

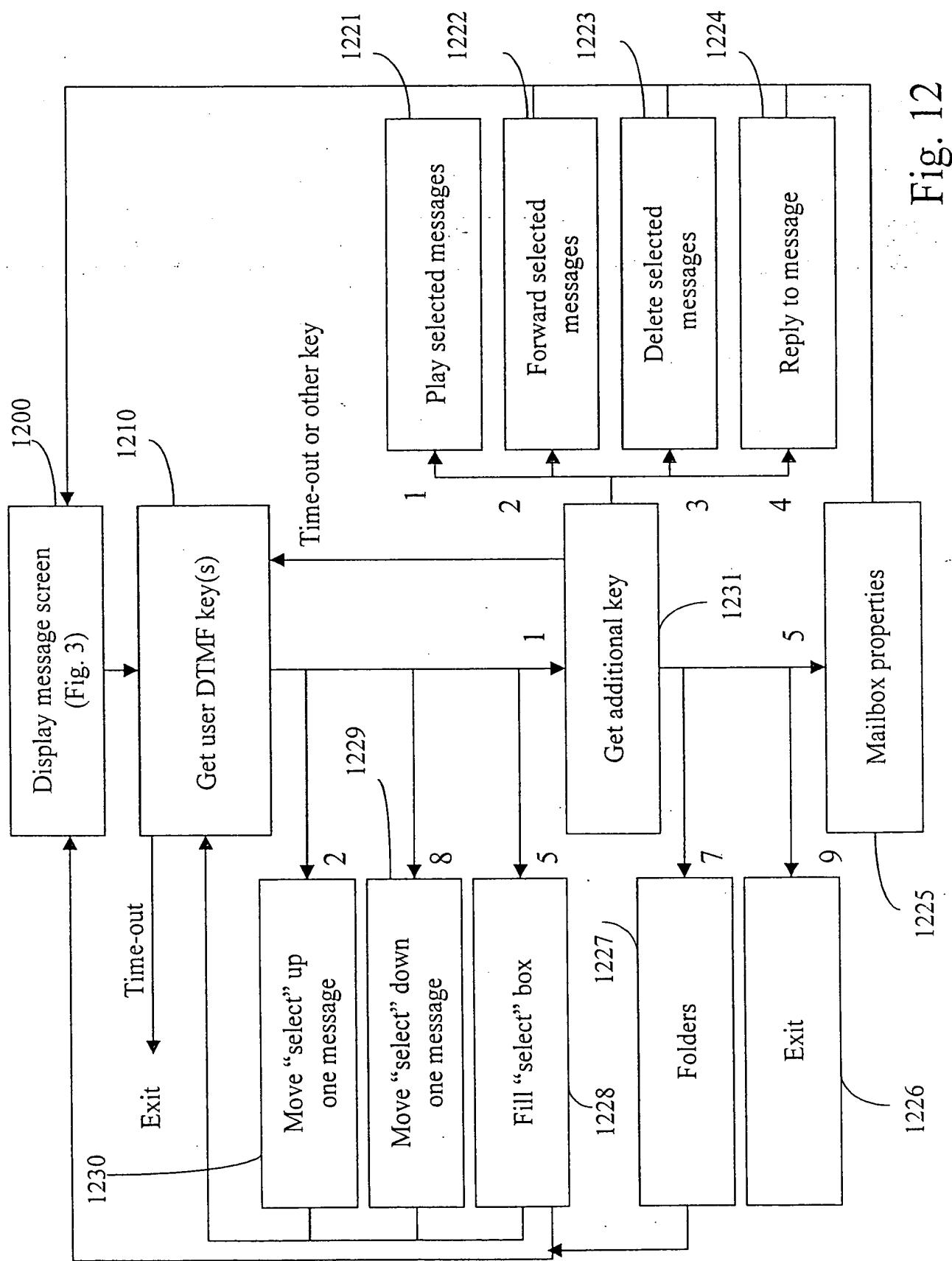


Fig. 12

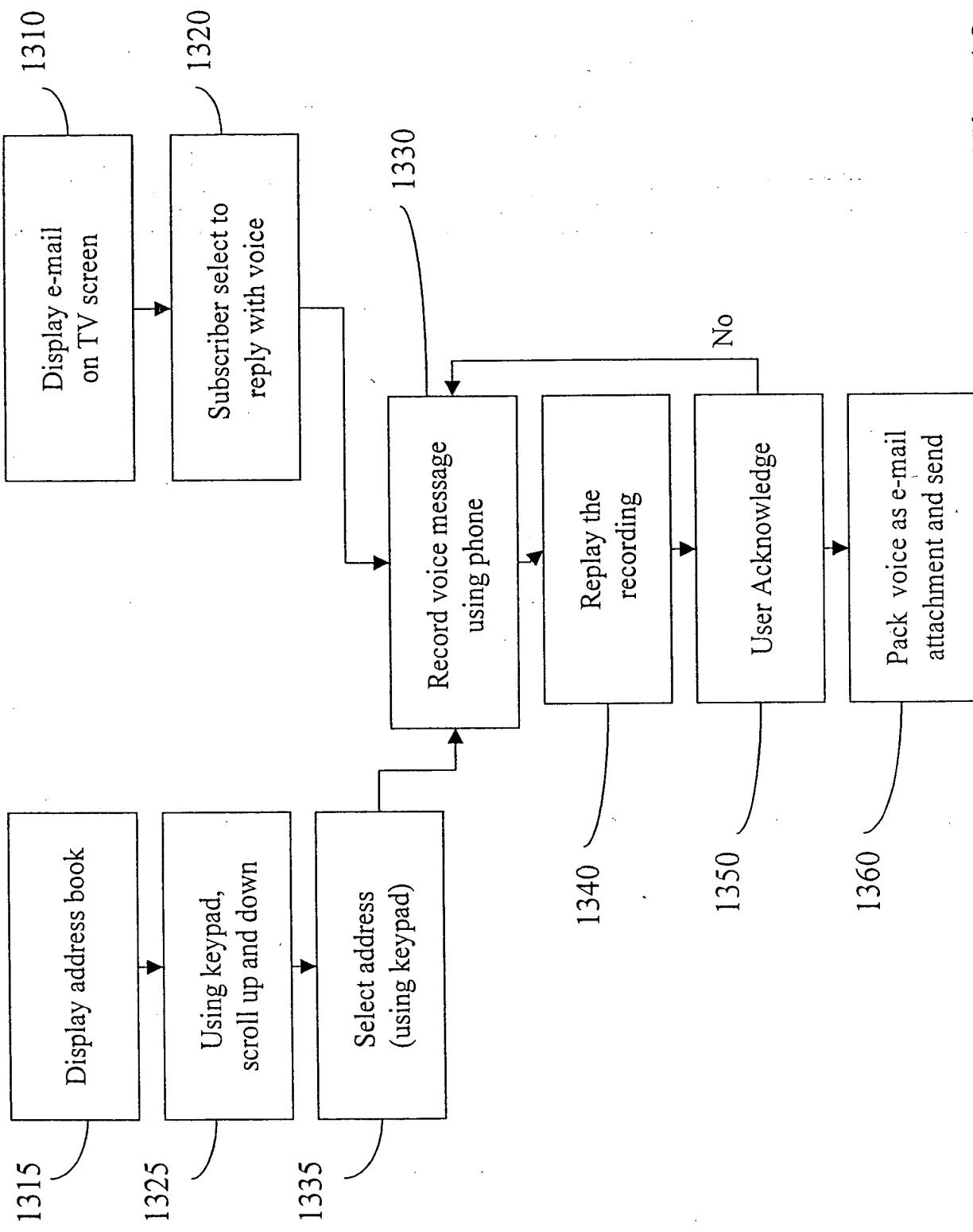


Fig. 13

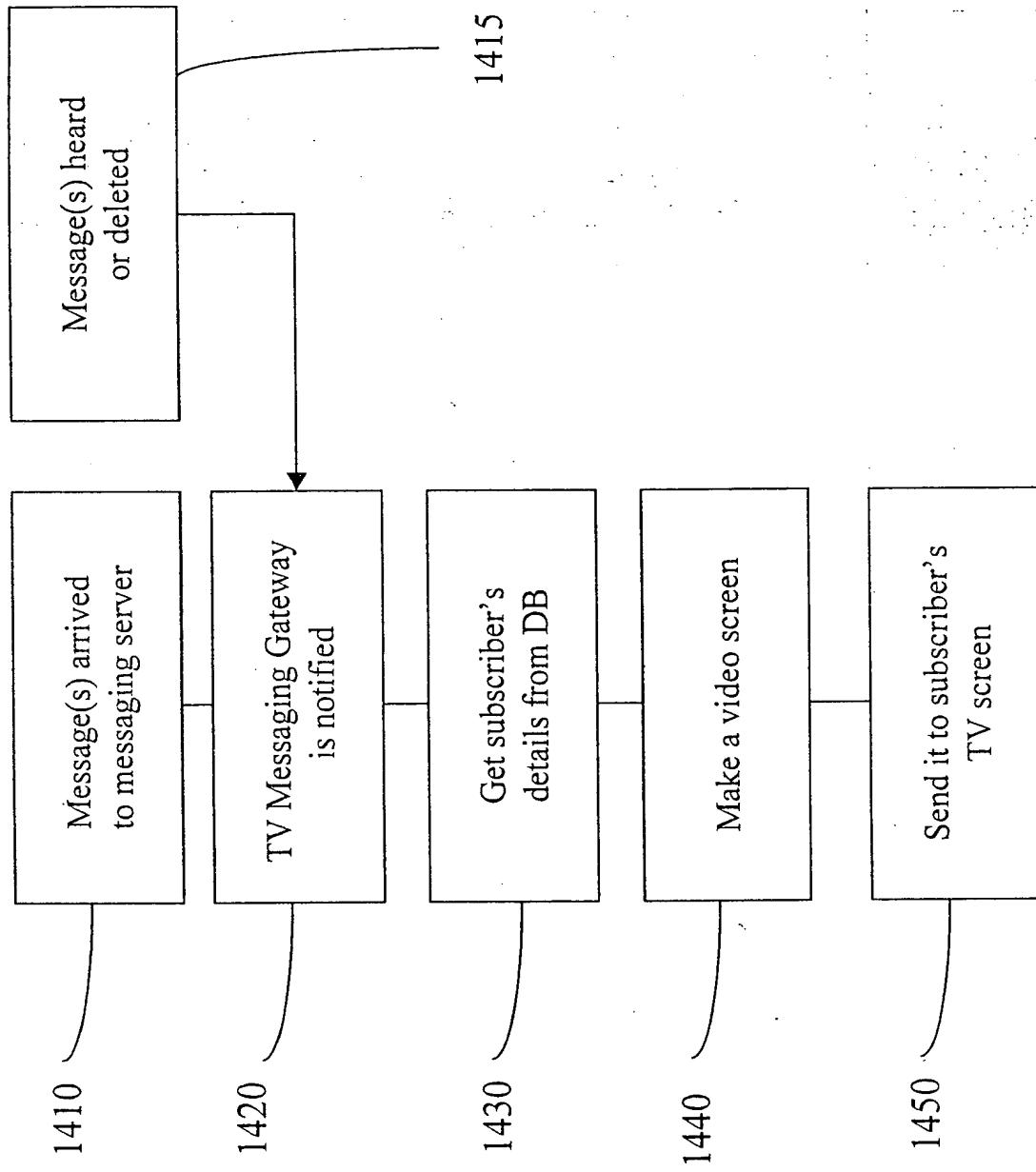


Fig. 14

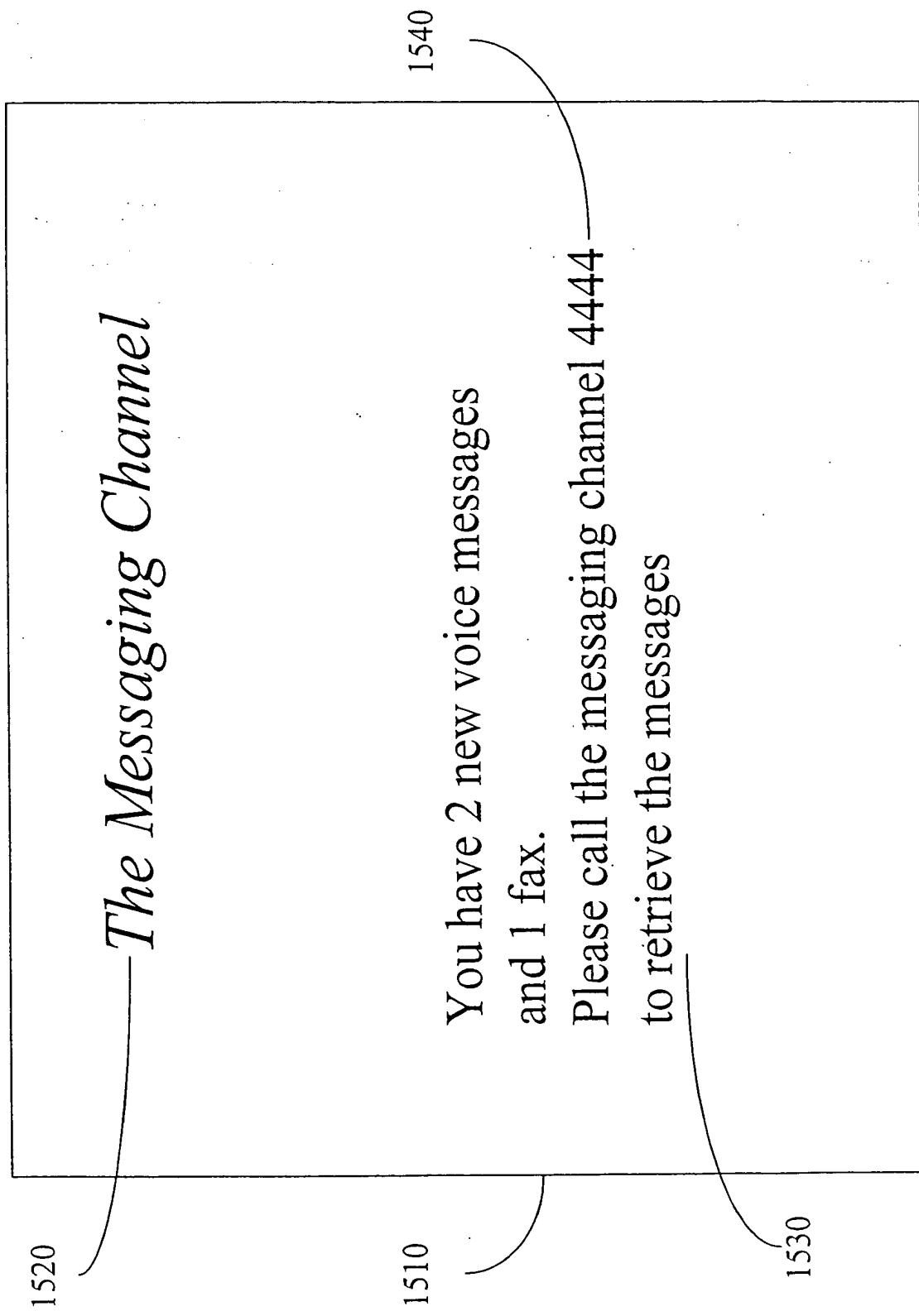


Fig. 15

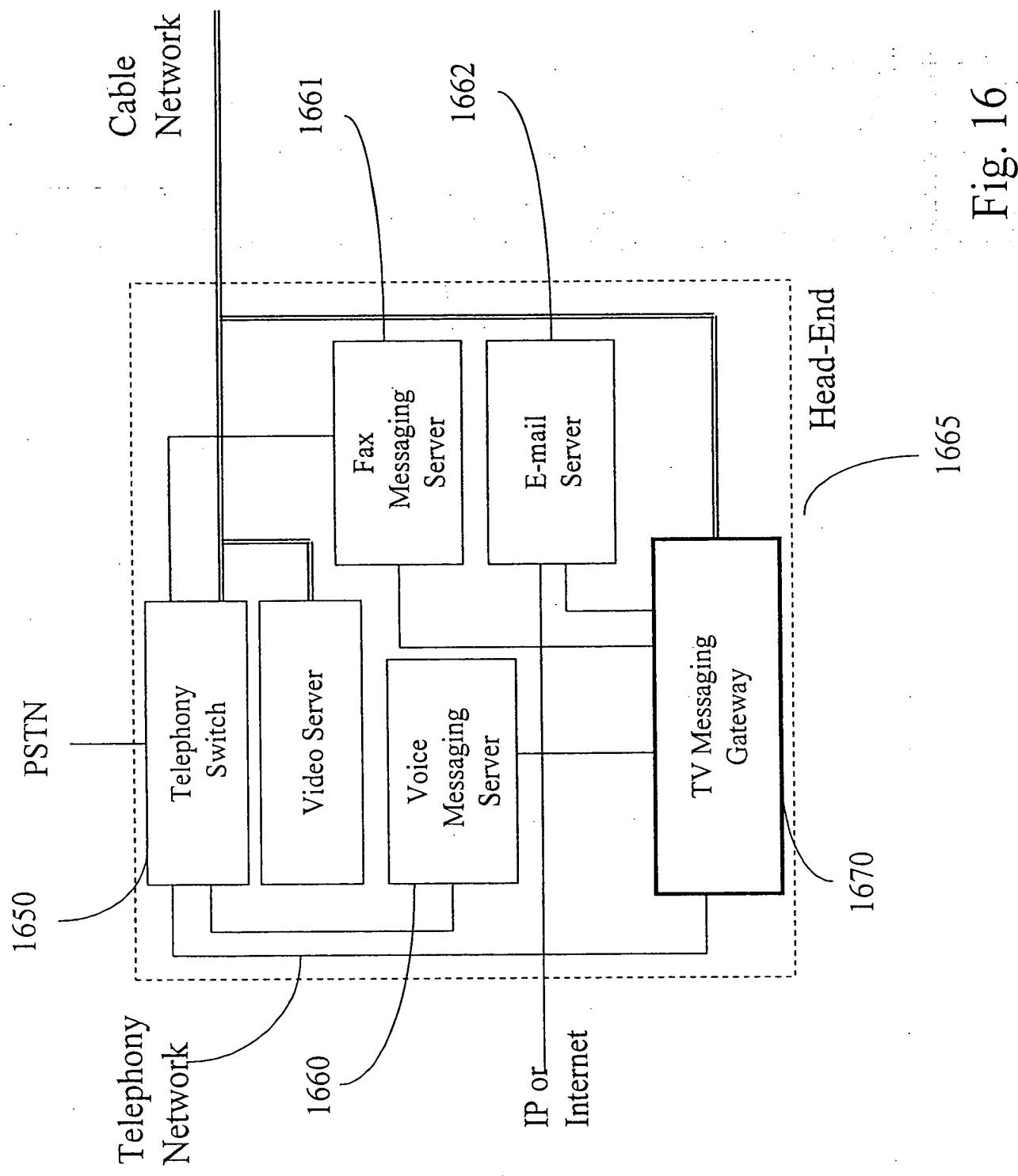


Fig. 16

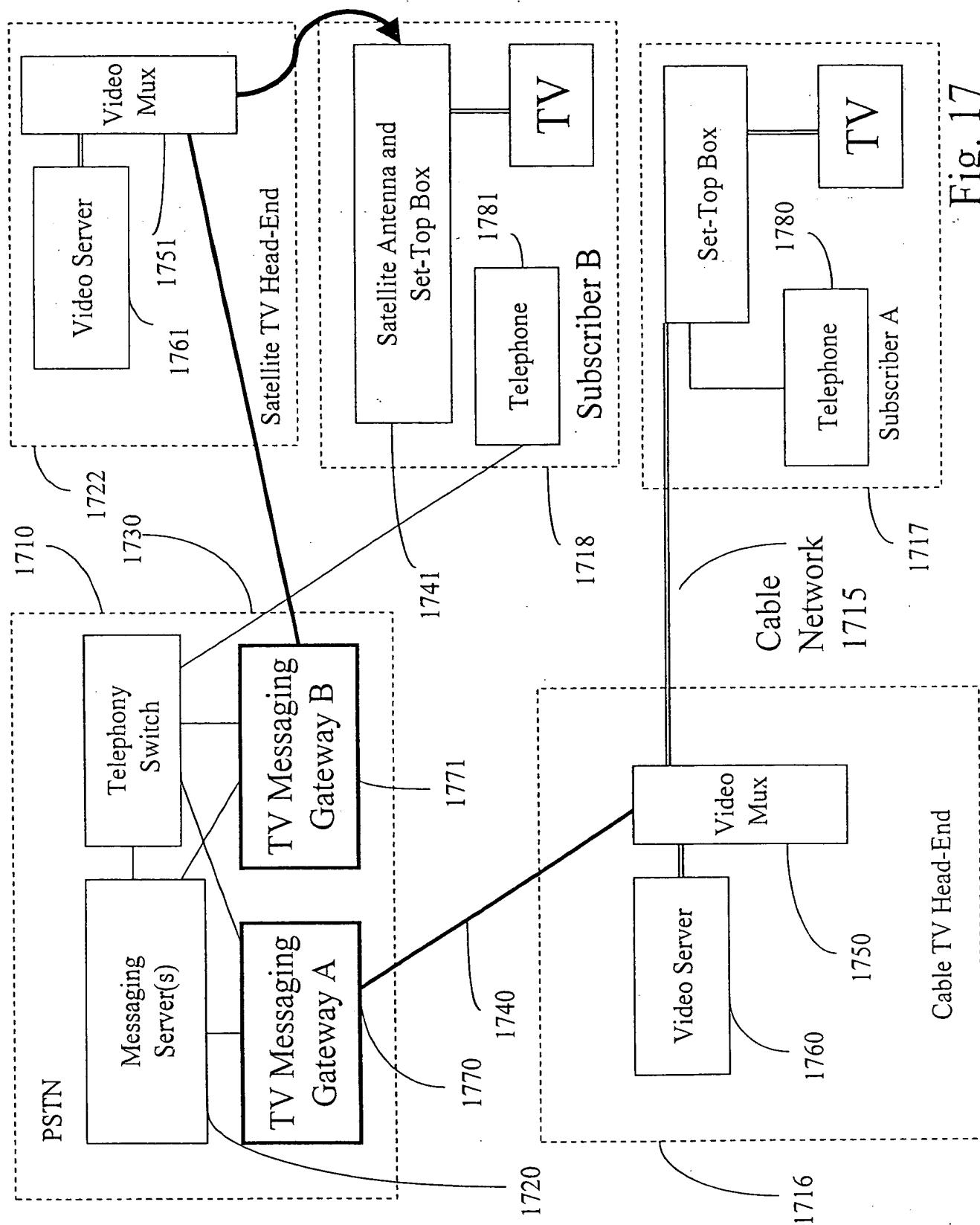


Fig. 17

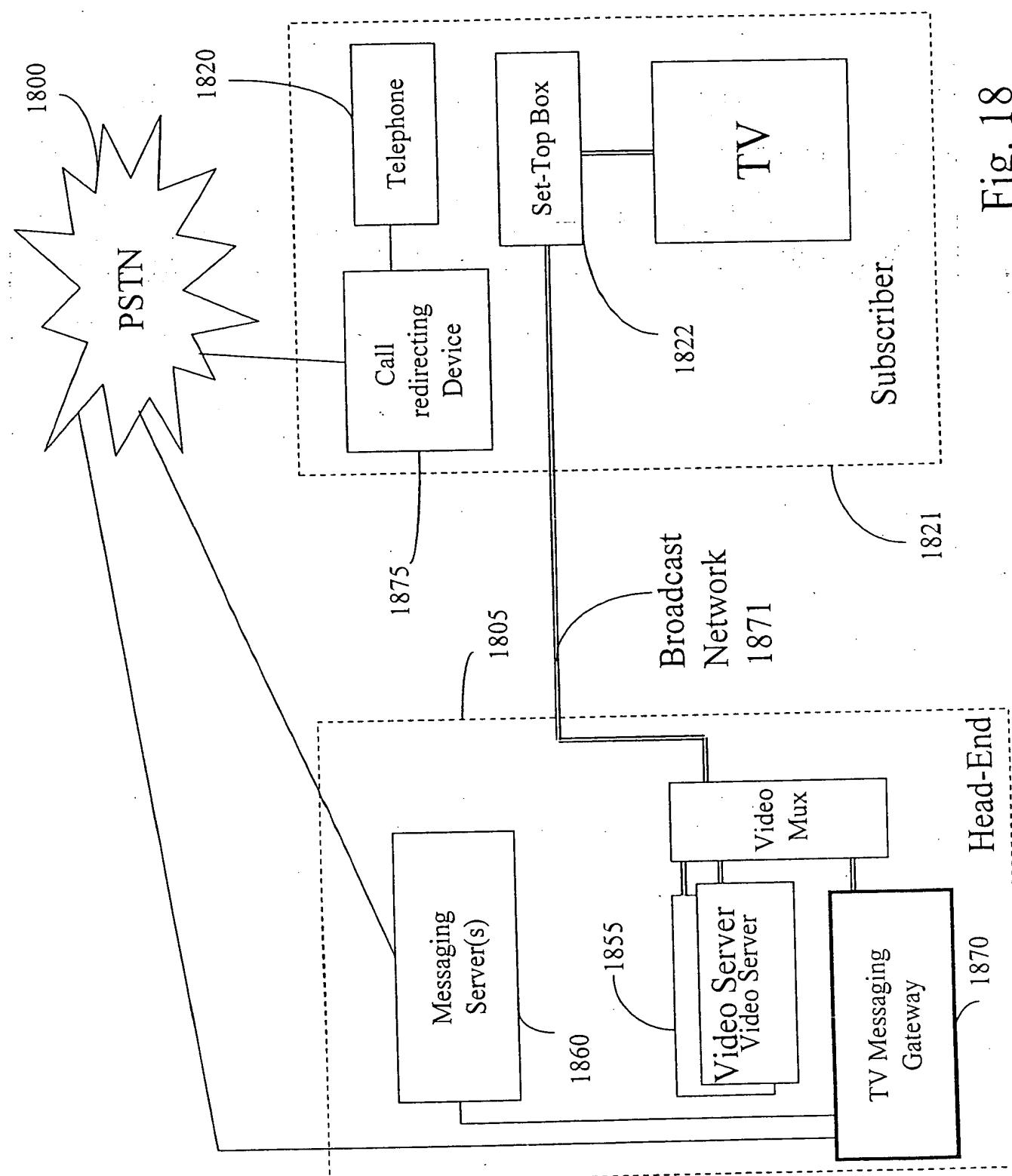


Fig. 18

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